JPRS 75350

21 March 1980

USSR Report

CONSTRUCTION AND EQUIPMENT

No. 2

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CONTENTS PAGE

CONSTRUCTION

Improvement in Capital Construction Management Urged
(I. Novikov; PLANOVOYE KHOZYAYSTVO, Jan 80) 1

Architecture of Two Moscow Olympic Facilities Described
(ARKHITEKTURA SSSR, Jan 80) 18

Olympic Village, by V. Shvorina
Central Army Sports Club, by G. Yasnyy

Final Preparations and Expectations for Olympics
(V. Popov; IZVESTIYA, 11 Jan 80) 40

Progress of Olympic Preparations
(STROITEL'NAYA GAZETA, 30 Jan 80) 46

Sports Arena Completed, by V. Kamenetskiy
Minting of Medals Underway, by V. Ganshin
Press Center, by V. Kononykhin

Tour of Press Center Described
(Yu. Andreotti; PRAVDA, 9 Dec 79) 50

Construction Projects in Moldavia Reviewed
(A. Proskuryakov; SOVETSKAYA MOLDAVIYA, 10 Jan 80) .. 52

METALWORKING EQUIPMENT

Development of Forging and Pressing Machines With Programmed Control
(A. M. Grishkov, et al.; KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVA, No 5, 1979) 58

CONTENTS (Continued) Page

Forging and Stamping Production at the Rostsel'mash Plant
(A. Ye. Tserna; KUZNECHNO-SHTAMPOVOCHNOYE
PROIZVODSTVA, No 7, 1979) 64

CONSTRUCTION

IMPROVEMENT IN CAPITAL CONSTRUCTION MANAGEMENT URGED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 1, Jan 80 pp 10-23

[Article by I. Novikov, deputy chairman of the USSR Council of Ministers and chairman of the USSR Gosstroy: "Scientific and Technical Progress and the Management of Capital Construction"]

[Text] In all the development stages of our nation, the party has always given primary significance to improving the methods of economic leadership and to accelerating scientific and technical progress.

A little more than 50 years have passed since the Soviet people, under the leadership of the Communist Party, began to struggle to carry out the first five-year plan. Over this relatively short historical period, the USSR has created a powerful production potential which makes it possible to successfully solve the complex questions of building the material and technical base of communism and continuously raising the prosperity of the people. The Soviet economy today is an economy of truly enormous scale. The fixed capital of our nation exceeds 1.5 trillion rubles, and in one year it produces more industrial product than was produced in the entire world in 1950. During the years of the last three five-year plans alone, the national income of the Soviet state has increased by more than 2-fold, the real per capita of the population has risen by 1.8-fold, and the volume of industrial production by 2.6-fold. The rise in labor productivity in the national economic sectors has made it possible to save the labor of over 62 million persons.

The achieved successes are the result of enormous organizational and political work carried out by the CPSU, and of the unstinting labor of the Soviet people moving firmly along the path toward communism.

The consistent improvement in planned economic management and the development of economic management methods are carried out on the basis of the course elaborated by the 23d, 24th and 25th CPSU congresses and aimed at the greatest possible rise in production efficiency and the quality of all work in the interests of the growth of the prosperity of the people.

V. I. Lenin pointed out that when a correct policy and a true line have been worked out, the success of the question depends primarily upon organization. "We have such a policy, such a line," stressed L. I. Brezhnev at the 25th CPSU Congress. "Hence the decisive element becomes organization, that is, a further improvement in economic management in the broadest sense of the word."[1] All management and planning activities should be ever more aimed at increasing production efficiency and work quality, achieving high end national economic results, and at the fuller satisfying of the growing social and personal needs. Precisely this was the aim of the decrees approved in July 1979: the Decree of the CPSU Central Committee "On a Further Improvement in the Economic Mechanism and the Tasks of Party and State Bodies," and the Decree of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Effect of the Economic Mechanism on Raising Production Efficiency and Work Quality." These documents contain a comprehensive program for improving planned management of the national economy. A system of measures is outlined aimed at ensuring the rapid growth of our economy in accord with the requirements of developed socialism. The necessity of the further dynamic and proportional development of social production and of consistently carrying out a policy of raising work efficiency and quality in all units of the national economy was emphasized at the Plenum of the CPSU Central Committee held in November 1979.

In the system of outlined measures, an important place has been given to improving capital construction. And this is no accident. As is known, capital construction holds the leading role in carrying out the state development programs for the productive forces of the nation, in ensuring the proportional development and technical reequipping of all the national economic sectors, and raising the prosperity of the Soviet people.

Over the years of the five-year plans, in the USSR an enormous amount of construction work has been carried out. Tens of thousands of new large advanced industrial, energy, transportation and agricultural complexes and installations have been built and put into operation. Housing, cultural, service and utility construction has been carried out at a rapid pace.

The capital investments into the national economy are constantly growing. Suffice it to note that during the current five-year plan, capital investments totaling over 620 billion rubles are to be used, and this exceeds the volume of investments during the previous five-year plan by 26 percent. These are enormous amounts. However their efficient use, as was pointed out at the November (1979) Plenum of the CPSU Central Committee still is not always sufficiently high. The quotas for completing production capacity are not fulfilled for many of the most important product types. In 1976-1978, the plan for putting fixed capital into operation was underfulfilled by 16.6 billion rubles, or by 5 percent, while the volume of incomplete construction rose by 22.1 billion rubles and significantly exceeded the standard level.

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[1] "Materialy XXV S"yezda KPSS" [Materials of the 25th CPSU Congress], Moscow, Politizdat, 1978, p 58.

The decrees of the CPSU Central Committee and the USSR Council of Ministers on the questions of improving the economic mechanism have pointed out the ways for raising the effectiveness of the funds being channeled into capital construction, and above all by accelerating the completion of production capacity and installations. At present, the ministries, departments, enterprises and organizations are carrying out intense work to implement the measures outlined by the party and government.

An essential condition for raising the effectiveness of capital construction is to strengthen the organizing role and soundness of the plans (long-range, five-year and annual), and their focusing on the end national economic results. In the system of these plans, a special role is played by the five-year plan as the main form of planning the nation's economic and social development and as the basis for organizing economic activities. The ministries and departments, the construction organizations and enterprises, the clients and contractors should, beginning with the 11th Five-Year Plan, work out a stable five-year plan for capital construction, with a breakdown of the quotas for the years, and balanced in terms of material, labor and financial resources, as well as with the capacity of the construction and installation organizations. For working out such a plan, it is essential to bring about a substantial rise in the concentration of capital investments, to shorten the construction times of the enterprises and projects, and to sharply reduce the volume of incomplete construction.

In construction there still is an inacceptable scattering of capital investments as well as material, technical and labor resources over numerous projects under construction simultaneously. According to the data of the USSR TsSU [Central Statistical Administration], the total number of production-end projects included in the 1979 plan and the intrasite title lists was 366,300, including 155,900 newly planned ones. At present, at one production-end project an average of a little more than 10 persons is employed, and this is clearly insufficient.

The incorporation of a large number of construction projects in the plan creates difficulties also in providing the capital investments for the enterprises and projects which are to be put into operation during the planned year. Thus, in the 1979 plan, more than 2 billion rubles of capital investments were not provided for the full completion of construction.

As yet the proportional amount of newly started construction projects remains high. In recent years their share in the total number of construction projects included in the plan has been around 30 percent. Of them almost 95 percent are projects with an estimated cost of under 3 million rubles, for which the approving of the title lists and incorporation in the plan are carried out in accord with the current procedure by the ministries and departments themselves or upon their authorization, by the inferior economic bodies.

As a result of the scattering of capital investments, material and labor resources, the construction times of the enterprises and projects are drawn out. An analysis of the dynamics of average construction times over the years of the last three five-year plans shows that the construction times of the enterprises and projects have been somewhat shortened. However, often the established standards of construction time are greatly exceeded. For example, the crude catalytic reforming unit at the Odessa Oil Refinery was built in 75 months with a standard of 19 months, that is, the standard was exceeded by 4-fold; the sulfuric acid shop at the Vinnitsa Chemical Plant was built in 81 months with a standard of 36 (by 2.2-fold); the chrome leather plant in Bogorodskoye in Gor'kovskaya Oblast was built in 62 months with a standard of 26 (by 2.4-fold); the bread and pastry combine in Kostroma in 89 months with a standard of 16 (by 5.6-fold), and so forth.

The national economy suffers great losses with the drawing out of construction times. Calculations have shown that an increase of just one year in the period that funds are tied up in construction leads to a reduction in the return on these funds by more than 10 percent. Moreover, the state suffers losses from the delaying in the obtaining of products from new capacity and from the increase in construction outlays. For this reason, both in construction planning and in carrying out the approved plans, the strict observance of the construction time should be unfailing for all participants in it.

The scattering of capital investments allowed in the plans leads to an increase in the amount of incomplete construction. Its actual level, with the systematic nonfulfillment of the established quotas for putting fixed capital into operation, significantly exceeds the standard. The plan for the amount of capital investments during the Tenth Five-Year Plan was fulfilled on a higher level by the ministries and departments than in terms of the completion of fixed capital. As a result, the volume of incomplete construction at the start of 1979 was 97 billion rubles, or 85 percent of the annual capital investment volume in comparison with 73 percent according to the calculations of the five-year plan and 65 percent according to the standards. Thus, the task of bringing incomplete construction down to standard amounts was unfulfilled.

In certain industrial sectors, along with the large amounts of incomplete construction, there is a low readiness of the construction workfront. For example, on 1 January 1979, in the oil producing industry the readiness of the projects was 15 percent with a standard of 48, in ferrous metallurgy, respectively, 14 and 36, in the coal industry 18 and 36, in the gas industry 18 percent and 40, in machine building 17 percent and 36, and so forth.

For raising capital investment effectiveness in accord with the tasks put forward in the decree of the CPSU Central Committee and the USSR Council of Ministers on improving the economic mechanism, the ministries and departments must first of all eliminate the scattering of capital investments, they must reduce the construction time of the enterprises and projects, and lower the amounts of incomplete construction. It would be possible to put almost 23 billion rubles of funds into economic circulation merely by bringing incomplete construction up to the standard amounts.

It is essential to work for a situation where capital investments for the construction of new enterprises and the expansion of existing ones are provided for in the plans only when the demand of the national economy for the given type of product cannot be met by existing production considering its reconstruction and technical reequipping. This would be aided by the procedure to be introduced during the 11th Five-Year Plan for establishing a list in the five-year plans of newly commenced construction projects, regardless of their estimated cost.

The ministries and departments should restrict maximally the newly commenced construction, and in a number of instances temporarily halt the construction of projects the building of which is not dictated by primary necessity. The bodies of the USSR Stroybank and the USSR Gosbank on the spot must strengthen control over the concentrating of capital investments on nearly completed sites and projects, as well as observing the demands of limiting new construction.

The task of reducing the newly commenced projects and concentrating the personnel and money on newly completed projects was a key issue at the November (1979) Plenum of the CPSU Central Committee and in the speech of L. I. Brezhnev at it.

The ministries and departments must raise the personal responsibility of the leaders of the enterprises, construction and installation organizations for concentrating financial, material-technical and labor resources on the nearly completed projects and the supplied planned projects, and to hold strictly liable those persons guilty of diverting material and financial resources into unplanned construction.

Another important area for raising the effectiveness of capital investments is a substantial rise in the amount of work related to the reconstruction and technical reequipping of operating enterprises. The economic advantages of reconstruction and technical reequipping over new construction are substantiated by the following example. Out of the ten units purchased in Poland for producing sulfuric acid, nine were installed at existing enterprises, including the Almalyk and Konstantinovskiy chemical plants with an estimated value, respectively, of 39.8 and 43.7 million rubles. The tenth unit was installed at a new plant, and the estimated cost of the work was 72 million rubles, that is, almost 2-fold more than at existing enterprises.

The volume of capital investments being channeled into reconstruction and technical reequipping has increased annually. In 1980, there are plans to channel 18.4 billion rubles of capital funds to these purposes, and this surpasses the quotas of the five-year plan by 15 percent. However the enterprises and organizations still are not willing to carry out reconstruction work. The ministries and departments must significantly raise the proportional amount of capital investments for reconstruction and technical reequipping of existing production in the total volume of capital investments, they must give priority in allocating equipment, material-technical and labor resources for this work, they must strengthen the incentive of the subordinate enterprises and organizations in carrying out reconstruction work, and they must make wider use of the right granted by the July (1979) Decree of the CPSU Central Committee and USSR Council of Ministers to the leaders of the production associations and enterprises, in determining the expenditures on reconstruction work and technical reequipping, to apply the correction factors set by the USSR Gosstroy on existing estimate standards for construction and installation work and on the overhead rates, and themselves approve the title lists for technical reequipping, regardless of the overall estimated value of the work.

A particular feature of the intended improvement in capital construction planning is in a further strengthening of the comprehensive effect of all aspects of the economic mechanism--planning, incentives, economic accountability, and financial-credit levers--on achieving the end results of construction. The effect of the plan on the end results of construction is achieved primarily by a system of indicators. For capital construction, a new system of planning and evaluation indicators is being set. The main ones are: the completion of the production capacity and projects, the volume of commodity construction product, the level of labor productivity and profit. In applying these indicators, the labor collectives will not endeavor to use as much money as possible, that is, to work for the "gross." The fully completed project put into operation with high quality--this is what will bring the collective economic gain, respect and honor.

The comprehensiveness of the management mechanism for construction is also manifested in the revision of the payment system between the participants of the investment process. In 1981, there are plans to complete the changeover to payments in construction for the enterprises, nearly completed complexes, stages and projects ready to produce product or render services. Such a procedure is interrelated with the system of planning indicators for capital construction, it orients the participants in construction at the end national economic results, it restricts the scattering of funds and contributes to the stability of the plans.

Working in the same direction is the system for crediting expenditures on incomplete construction. The contractor, in receiving payments from the client only for completed projects, stages, complexes and enterprises as a whole, will be given a bank credit for incomplete production within the limits of construction and installation work established for each project according to the years of the five-year plan, and for definite times. With the nonfulfillment of the plan quotas leading to a delay in the completion of the projects, a system of increased credit interest collected by the bank will go into effect.

The introduction of the new system of economic relationships into capital construction practices for the purpose of achieving the end results of production with high technical and economic indicators requires that the ministries, departments and their subordinate enterprises and organizations carry out serious preparatory and organizational work. Only in observing this condition is it possible in a short period of time to obtain a real return from the range of planned measures to improve planning and strengthen the effect of the economic mechanism on raising production efficiency and work quality.

Improving the economic mechanism in construction also presupposes a better structure and form for the management of the sector. The construction ministries should work out and introduce general management plans which envisage the transition to two- and three-tier management systems. Such a reorganization will be carried out not by a mere reduction in the management levels, but rather by systematizing the structure and functions of the construction and installation organizations and the construction management bodies.

In 1978, the USSR Gosstroy and USSR Gosplan approved the Instructions on the Procedure for Elaborating General Construction Management Plans. These give the basic principles for two- and three-tier management systems. It has been established what organizations are considered in its primary- and middle-level groups; the ways of eliminating multiple levels and bringing the management bodies closer to construction work are shown as well as the way for improving the level of specialization and consolidating the construction and installation organizations; recommendations are contained on creating new, most progressive organizational forms of management such as production, construction-installation and all-Union construction-installation associations.

The production construction-installation association will differ from a trust in the greater scale of activity (from 50 to 100 million rubles of construction and installation work a year), by the more self-contained production and economic activities, by significant economic and legal independence, by a higher level of the socialization of production, the deepening and developing of its specialization, and by management centralization. The all-Union construction-installation association is a production and economic complex, as a rule, specialized for types of construction, for construction-installation work or for the sectorial purpose of the projects under construction on the nation's territory or in the zone of activities of the construction ministry. Such an association is a middle-level management body, and consists of the construction-installation organizations, enterprises of the construction industry, transport, design, scientific research and other organizations. It is given responsibility for the prompt carrying out of the quotas for the completion, state and development of the production and economic complex, for the technical level of construction, the quality of the construction and installation work being carried out, the observance of the estimated cost of construction, the effective use of capital investments for building the enterprises and projects of the association, and for the prompt full use of the production capacity.

The ministries and departments having under their jurisdiction contracting construction and installation organizations in the near future should complete the elaboration of general construction management plans, and prior to 1982 implement their planned introduction in accord with the approved schedules.

An improvement in the supply of materials and equipment to the projects will aid greatly in raising the efficiency of capital construction and accelerating the completion of production capacity and projects. In working out the five-year and annual plans, the USSR Gossnab, the ministries and departments must see to it that the planned capital investment volumes are balanced in terms of the material and technical resources and equipment. The ministries and departments must promptly prepare for converting the construction projects to complete supply of materials through the territorial material and technical supply bodies under the orders of the construction and installation organizations in accord with their demand as determined by the designs and estimates, as well as for introducing the payment procedure between client and general supplier as a whole for the delivered or installed set of equipment.

Under the conditions of developed socialism, the decisive factor for the growth of social production and for increasing efficiency is an acceleration of scientific and technical progress. For this reason, the July (1979) Decree of the CPSU Central Committee and the USSR Council of Ministers and the November (1979) Plenum of the CPSU Central Committee devoted particular attention to these questions.

Soviet construction science encompasses virtually all the basic problems of capital construction. The volume of scientific research annually is about 230 million rubles. Over recent years, construction science has solved a number of important theoretical and practical problems. Many developments in the area of the theory of structures and structural elements, the methods of calculating complicated spatial systems and others have gained broad use and recognition not only in our nation but also abroad. The collectives of the scientific institutions have been the initiators of valuable undertakings aimed at carrying out the urgent problems of economic construction. All of this creates a reliable potential in the area of raising the scientific and technical level and effectiveness of capital construction in our country. However, the development of scientific research and its actual return do not fully meet the increased demands of capital construction.

In 1978, the CPSU Central Committee and the USSR Council of Ministers approved the Decree "On Further Raising the Effectiveness of Scientific Research in the Area of Construction, Architecture, the Building Materials Industry, Road and Construction Machine Building and the Accelerated Introduction of Scientific Achievements into Construction Practices." In accord with this, the USSR Gosstroy, the ministries and departments have carried out work to improve planning, to coordinate scientific research and to accelerate the introduction of the results of scientific and technical progress into construction and industrial production.

In the 1980 plan, considering the proposals drawn up for the first time by the USSR Gosstroy with the participation of the USSR Gosplan, the GKNT [State Committee for Science and Technology], the ministries and departments, there has been a significant increase, in comparison with the previous years of the five-year plan, in the quotas set for the ministries and departments for the range, volume of introduction and use of efficient production methods, materials, articles and structural elements in construction.

In 1980, the quantity of newly developed types of industrial product is to rise by more than 1.3-fold in comparison with the previous year, and including by 1.8-fold for new types of building materials, and the use of new construction machines and industrial production equipment for producing materials, parts and structural elements will rise by almost 20 percent. There is to be the output of about 50 types of new products which were not envisaged by the work programs of the Tenth Five-Year Plan. The realization of the quotas relating to new technology will provide a savings in a number of acutely scarce materials, and will reduce labor expenditures at the construction sites.

There are plans to save around 80,000 tons of metal by increasing the use of wooden glued structural elements, reinforced concrete pressurized pipe, steel structural elements from broad-flang I-beams and T-beams, reinforced concrete elements made from high-grade cements and other measures.

The wider use of structural elements from steel shaped flooring, enclosing elements with asbestos cement cladding from large-sized sheeds, dry gypsum plastering and so forth will make it possible to reduce cement consumption by 4.5 million tons.

The planned quotas for introducing new technology provide a calculated reduction in the number of employees by more than 70,000 persons due to reducing labor intensiveness in construction.

However, it must be recognized that the real effect from the introduction of scientific and technical achievements into the sector and the actual benefit from the use of innovations are not properly considered in the plans of the construction organizations and enterprises of the construction industry. For this reason, the leaders and collectives of the organizations and enterprises do not always count on the given reserve in carrying out the state plans.

For raising the return from the scientific research developments, it is essential that the programs and plans for scientific and technical progress be aimed at providing a high technical level in the sector, at improving product quality, and serve as the basis for working out capital construction plans. The ministries, departments, the scientific research and design organizations and the production collectives should proceed precisely from this in preparing the following: Proposals on the program for scientific and technical progress over the 20 years with a breakdown for the five-year periods; the draft five-year plans for raising the technical level of construction and the building materials and structures industry; the plans for new technology.

In improving and coordinating the development of scientific research, a special role is given to the head scientific research organizations which must review and coordinate the scientific subjects of the corresponding area in all the interested organizations, regardless of their departmental affiliation. This will make it possible to exclude unimportant areas of research and unjustified parallelism in the work.

The activities of the scientific, design and construction organizations and enterprises of the construction industry in the area of carrying out scientific research and introducing new technology into practice should have a direct impact on accelerating scientific and technical progress in the sector. We must work continuously so that each completed research is widely employed in designing, construction and industrial production. We must fundamentally alter the situation which has arisen in a number of the scientific research organizations where not more than one-half of the work being carried out has been brought to the stage of actual introduction.

The construction ministries and departments, the USSR Ministry of Building Materials Industry, the Ministry of Construction and Road Machinery, and the Union republic gosstroys should establish rigid control over the activities of the subordinate scientific research organizations, the focus of their work, the organization of introducing the results of scientific developments into production, the placement of personnel, and the implementing of the planned measures to raise the efficiency and quality of their work. Particular attention must be paid to improving work in introducing the results of scientific research into actual designing, construction and industrial production, including by norms and standards.

The July (1979) decrees of the CPSU Central Committee and USSR Council of Ministers have posed this task for capital construction as well as the other national economic sectors.

The time has come to fundamentally revise the approach to solving many questions related to the introduction of new technology. It is essential that the plan for its development and introduction be organically linked to the indicators of the plan of the construction and installation organizations and the construction industry enterprises, while the use of new technology in the standards, plans as well as at the construction sites and enterprises become obligatory. Here the corresponding scientific research organizations should accelerate the preparation of proposals on paying bonuses to the workers of all levels of the sector only in receiving an actual economic effect from the introduction of the new technology.

The use of scientific and technical achievements and advanced experience in construction as yet remains a "bottleneck," as is shown, in particular, from the significant underfulfillment by the construction ministries of the quotas to introduce new technology over recent years.

It is generally recognized how urgent is the question of saving metal. The construction ministries and departments often explain the nonfulfillment of the plan for contracting work and the completion of production capacity and projects by the shortage of rolled metal and pipe. At the same time, they do not always take sufficient measures to save metal. For example, a significant savings in metal could be provided by using thin-walled reinforced concrete and reinforced cement shells with a span up to 18 m in building various types of buildings and structures. Reinforced concrete pressurized pipe has replaced metal pipe only in limited amounts, although the use of each thousand square meters of vibration and hydraulic pressed pipe instead of metal pipe saves 700 tons of metal. There is a substantial reserve for reducing material intensiveness in extending the use of prestressed reinforced concrete structural elements. The given question is not a new one, however the output of such elements as yet lags behind the quotas of the five-year plan.

The nonfulfillment by the construction ministries of the quotas relating to new technology has become one of the basic factors in the lag of the growth of labor productivity in construction over the first 3 years of the current five-year plan (8.5 percent with a plan of 15). For the purposes of accelerating the introduction of scientific and technical achievements into practice, the construction ministries and departments must substantially raise the role of the large detachment of specialists from the institutes and Orgtekhstroy [Organization and Technology of Construction] trusts. It is essential to use more advanced methods and forms of work for the orgtekhstroys as active proponents of all the new and advanced which is created by construction science.

Many of the client ministries and departments do not pay sufficient attention to the introduction of scientific and technical achievements into construction. For this reason it is essential that they strengthen their work in widely introducing the research results and new equipment into the plans being worked out in producing production equipment, construction machinery and mechanisms, structural elements and materials.

At present the ministries and departments are drawing up a draft plan for scientific and technical development for the 11th Five-Year Plan. In carrying out this work, provision should be made for a substantial broadening of the range and volume of use of new equipment, the designated quotas should be thoroughly backed up, specific measures ensuring their fulfillment should be outlined, and precise responsibility for carrying out the quotas should be established.

The accelerating of scientific and technical progress is one of the basic reserves for ensuring the prompt and high quality fulfillment of the quotas of the Tenth Five-Year Plan and the decisions of the 25th CPSU Congress in the area of capital construction. It is very important in all this work to raise responsibility for the end results not only for the ministries and departments but also for the scientific research and design institutes, the construction organizations, the industrial enterprises and all the workers of the sector.

Designing plays an active role in raising the efficiency of capital construction. The workers of design organizations lay out the shortest and economic path from the birth of the idea to its practical implementation. In their decisions they must use recent scientific and technical achievements and provide a high level of production.

The consistent realization of the decrees of the CPSU Central Committee and the USSR Council of Ministers of 28 May 1969 on the questions of capital construction has made it possible to improve the quality and the scientific and technical level of designing. However, at present design and estimate work requires further improvement. It should fully aid the measures of improving planning and strengthening the effect of the economic mechanism on raising production efficiency and work quality.

The shortcomings existing in the design system impede the work on reducing construction costs, raising the technical level of the enterprises being created, and reducing their construction time and the reaching of full capacity. The results of an expert evaluation carried by the USSR Gosstroy of the plans and the technical and economic background studies (TEO) for the construction of enterprises and installations has shown that as an average one out of every three designs and TEO has serious shortcomings. Many plans do not use the most recent scientific and technical achievements in the area of production methods or the layout and design solutions for the buildings and installations. Proper attention is not always paid to the economic use of the labor, material and natural resources, to raising the level of industrialization or to improving the organization of construction. Thus, the TEO for the building of the Vitebsk biofactory was worked out by Giproniisel'khoz [All-Union State Design and Scientific Research Institute for Standard and Experimental Designing of Agricultural Production Complexes and Enterprises of the Biological Industry] of the USSR Ministry of Agriculture without proper general-site standardization of the buildings. Merely for the width of the buildings, 12 different spans and 9 different heights were envisaged. The lack of standardization impedes a solution to the questions of industrializing construction, and this significantly reduces the overall economic effectiveness of the plans.

The Leningrad institute Giproshakht [State Institute for the Designing of Mines] of the USSR Ministry of Coal Industry in the contract design for the building of a unit for liquid coal products as part of the Berezovskiy-1 Mine provided for the locating of production equipment in heated buildings. The moving of the equipment into the open air in accord with the proposals of Glavgosekspertiza [?Main State Expert Evaluation Committee] of the USSR Gosstroy would have made it possible to sharply reduce the amount of construction and installation work, and reduce by almost 70 percent the consumption of heat and electric power on the heating and ventilating of the buildings.

In the plans examined in 1978 the expert bodies disclosed a possibility of reducing the estimated cost of construction by 4.7 billion rubles. At the same time, incorrectly missed work and expenditures of 1.3 billion rubles were additionally included in the estimates. The proposals of Glagosekspertiza of the USSR Gosstroy alone would make it possible to reduce metal consumption by almost 300,000 tons for the plans and TEO which underwent expert evaluation in 1978, including 160,000 tons of metal pipe.

The current designing procedures in many instances lead to an unjustified detailing and multiple stages in working out the plans, and because of this there is a sharp increase in the amount of design specifications as well as labor and time expenditures on working out, coordinating, evaluating and approving the plans. As a result, the decisions made on a number of plans, particularly for large enterprises and installations with long construction times are obsolete before construction is completed, and its cost is substantially altered.

Designing practices point to the necessity of fuller consideration of the influence of scientific and technical progress on the cost of the projects, and the more accurate picking up of changes in the price-forming factors.

On the basis of a careful study of the state of affairs in designing, the USSR Gosstroy with the participation of the USSR Gosplan, the USSR Stroybank, the ministries and departments have worked out proposals which provide a range of measures to further improve design and estimate work and to upgrade the quality of designing.

The ministries and departments should widely develop work on improving designing, and above all in the direction of accelerating the introduction of scientific and technical achievements through the designs and estimates. For improving planning and strengthening the effect of the economic mechanism on raising the effectiveness of capital construction and the quality of the work, it is essential to revise the existing standards base, as well as work out a number of new documents on the methodology and organization of designing and engineering studies. Work must also be done on the questions regulating the financial and economic activities of the design and research organizations.

One of the important measures is to work out and quickly approve instructional documents which would set the composition, content, and procedure for working out, coordinating and approving the plans for the development and location of the national economic sectors, bearing in mind that these plans should become the basis for determining the list of enterprises and installations which are to be newly started, reconstructed and expanded as part of the five-year plans.

Within a short time instructions should be prepared on working out the five-year plans for design and research work, and for developing the network and physical plant of design and research organizations. The ministries and departments must raise the responsibility of officials for the reliability of the design and research plans worked out, and in 1980 carry out an inventory of the existing design specifications for disclosing those that are obsolete and should not be used subsequently.

It is essential to clearly define the demands for substantially reducing the amount of design specifications worked out so that these specifications without excessive details would contain the basic technical solutions, the data for material and technical supply and the organization of construction, and the development of new and special equipment, and would make it possible to reliably assess the cost of construction, its advisability and national economic effectiveness.

Serious attention must be given to the questions of simplifying the procedure and reducing the time for coordinating the design and estimate specifications. It is intolerable when in many instances it takes longer to coordinate the plans with the bodies of state supervision and the construction organizations than it does for them to be worked out by the design institutes. The ministries and departments should strictly monitor the fulfillment of the standard demands on the plans and the procedure of coordinating them by the supervisory bodies.

Standard designing has come to hold a strong place in the system of providing capital construction with design and estimate specifications. This has had an active influence on reducing the time and cost of carrying out design work. A changeover to five-year planning of design and research work is an important stage in further developing standardization in capital construction. This will make it possible to carry out a uniform technical policy more efficiently in construction, and with greater reliability to forecast the subjects of standard and experimental designing. All projects for civil and housing purposes, in agriculture, industry and the building industry which have repeated use and a stable production method over a number of years should be built using standard design specifications.

The urgent necessity of decisively improving the quality of designs, reducing the duration of their elaboration and the prompt supply of the projects with design and estimate specifications requires a strengthening of the incentive role of the material incentive systems for the workers of the design and research organizations to provide a high technical and economic level of the design solutions as well as for making active use of the most recent scientific and technical achievements and advance experience. This task has been set for the ministries, departments, associations, enterprises and organizations by the July (1979) decrees of the CPSU Central Committee and USSR Council of Ministers, and it should be successfully carried out.

The expert bodies are to play an important role in a further qualitative improvement in the level of designing, in introducing scientific and technical achievements through the designs, and in raising the effectiveness of capital investments. However, there still are many shortcomings in the activities of the expert subdivisions of the ministries and departments.

There have been frequent instances when the departmental expert subdivisions by their own demands have increased the amount of design and estimate specifications, and have not observed the established procedure and times for their review, and this has drawn out the approval of the plans and has led to interruptions in the delivery of working specifications to the construction sites.

The ministries and departments must substantially improve the work of the expert bodies. All expert evaluation work must be so arranged that each approved plan reflects the most recent scientific and technical achievements, it must stand out in high indicators of labor productivity, and have low cost, while the technical level and quality of the product planned for production should correspond to the best Soviet and foreign models.

The ministries and departments must institute particularly strict control over the rational use of capital investments and over ensuring their primary use for reconstruction and technical reequipping of existing enterprises. Often ministries in essence carry out expansion or even new construction at existing enterprises under the guise of their reconstruction. Thus, the Ministry of Heavy Machine Building approved plans for the reconstruction of the Plant for Materials Handling Equipment imeni Kirov (Leningrad), according to which the production areas were to be doubled. For the Kommunist Mining Equipment Plant (Krivoy Rog), the same ministry provided for the construction of 65,000 m^2 of new production area in the TEO for reconstruction, and the proportional amount of construction-installation work with such "reconstruction" exceeded its level with new construction.

The ministries and departments must substantially broaden the use of progressive methods in organizing and carrying out designing. Thus, the combining of the designing and construction processes in building the Volzhsk Motor Vehicle Plant made it possible to significantly shorten the overall construction time and reduce the volume of design specifications.

The carrying out of standard and individual designing of enterprises and projects on a competitive basis will help to improve the quality of the plans, as well the broad participation of highly skilled specialists in the competitions.

Significant reserves for improving the effectiveness of capital construction and accelerating the completion of production capacity and projects can be obtained by improving the organization and methods of construction work.

The use of the method of designing, preparing, organizing and managing construction proposed by Ukrainian construction workers at complicated projects and large industrial complexes makes it possible to build the enterprises and projects in a shorter time and with better economic indicators.

Thus, the use of the given method in erecting the coking battery No 8 at the Avdeyevka Coke Byproduct Plant made it possible to shorten the length of construction by 3 months in comparison with the traditional methods of organizing construction, to reduce the planned cost of the work carried out by 4 percent, to increase output by 12 percent, and to obtain 580,000 rubles of additional product from the early completion.

The ministries and departments building in the underdeveloped regions of the North, Siberia, the Far East and elsewhere should adopt and widely use the watch and expeditionary methods of organizing construction in terms of the specific conditions. According to existing calculations, the use of these methods in developing the oil and gas complex of Western Siberia has made it possible to provide a savings in capital expenditures of around 15 million rubles per 1,000 employees.

The extensive introduction of progressive methods for organizing construction into practice has been aided by the comprehensive specific programs for organizational and technological support of construction as elaborated by the TsNIIOMTP [Central Scientific Research and Experimental Design Institute for the Organization, Mechanization and Technical Assistance to Construction] of the USSR Gosstroy together with the construction organizations and providing for the carrying out of scientific research and design studies, as well as the providing of technical and procedural aid in using them at the construction sites. The use of such a program in building the industrial complex at Ul'yanovsk will make it possible to raise labor productivity by 8-10 percent and to reduce the duration of construction by 10 percent in comparison with the standards.

An important direction in raising the organizational level of construction and labor productivity at the construction sites is a wider spread of the brigade contract method. And the greatest success comes to those construction organizations where all the brigades have been converted to this work method. The Tallin and certain other housing construction combines have introduced the brigade method for the entire production flow of plant--transportation--construction site. The experience of the contract brigades using this method at the KPD [Large Panel Housing Construction] Trust of Glavsochispetsstroy [?Main Sochi Special Construction Trust] has made it possible to increase the pace of assembling housing of the I-467 series from 8.9 stories a month to 11.4 stories; the quality of the structural elements and parts produced by the plants has been improved.

The following fact provides cause for reflection. In construction the quotas for the growth of labor productivity are systematically not fulfilled, although the brigades working under the Zlobin method in 1978 overfulfilled the plan for this indicator by 7.5 percent, while the cost of the work carried out by them is 4 percent lower than the planned. Nevertheless, the brigade contract is still being introduced slowly into construction, and the independent brigades carry out only one-third of the total volume of construction and installation work.

An important undertaking in improving the organization of labor at the construction sites was the initiative of the Sverdlovsk construction workers who came out with the slogan: "The Five-Year Quota of the Brigade with Fewer Personnel." The basic condition for the actual implementation of this campaign is to supply the brigades with advanced equipment and tools, to introduce progressive work methods, to combine related professions, to improve worker skills, and to strengthen production and labor discipline in the collectives. The campaign of the Sverdlovsk workers has been supported by almost 39,000 brigades who have released over 45,000 workers from their personnel, and from these workers 2,900 new construction brigades have been organized. The newly organized brigades carried out 22.9 million rubles worth of additional construction-installation work at the USSR Ministry of Industrial Construction, 13.5 million rubles worth at the Ministry of Rural Construction, and 4.2 million rubles worth at the Ministry of Construction of Petroleum and Gas Industry Enterprises.

Construction is also not using major reserves for the growth of labor productivity. Here the basic areas are the following: Reducing the expenditures of manual labor by raising the level of the mechanization and automation of production processes, the working out of production methods involving few operations, the transferring of the execution of the maximum possible number of jobs and operations from the construction sites to plant conditions, broadening the use of efficient building materials, articles and structural elements, and so forth.

The ministries and departments which have construction and installation subdivisions should bring about a substantial improvement in the organization and methods of construction, as well as the broad dissemination of advanced experience and valuable initiatives. This is a major reserve for improving the efficiency of capital construction, and it should be fully realized. Our nation has entered the last, concluding year of the Tenth Five-Year Plan. The capital construction workers, in being guided by the decrees of the CPSU Central Committee and the USSR Council of Ministers on the questions of improving the economic mechanism as well as by the decisions of the November (1979) Plenum of the CPSU Central Committee, are doing everything possible to make a worthy contribution to improving production efficiency and product quality, and to carrying out the tasks of communist construction.

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Olympic Village

Moscow ARKHITEKTURA SSSR in Russian No 1, Jan 80 pp 6-9

[Article by V. Shvorina, staff worker of the Olympiad-80 Orgkomitet [Organizing Committee]: "Moscow's Olympic Village"]

[Text] A village rose up recently in southwest Moscow. True, it is an unusual village--the Olympic Village. And it has nothing in common with traditional villages. Soon this compact city in miniature will be prepared to receive about 13,000 inhabitants. The first residents here will be the world's best athletes, who are coming to Moscow in 1980 for the Games of the 22d Olympiad. This modern multistoried city has been named a village in the long tradition honoring the first Olympic Village, which was built in 1932 at the Games of the 10th Olympiad in the American city of Los Angeles. Seven hundred small wooden prefabricated huts were set up 20 km from that city, at a golf links. They accommodated 1,048 athletes from 37 countries. The village was surrounded by a chain-link fence. Cowboys on horseback provided security.

Then, for the first time, the athletes of the various countries were able day by day to associate with each other, at the same time preparing themselves for the competitions, studying each other, and borrowing the best. This answered the aims of the international Olympic movement, which consists in cooperation in the development of those fine physical and moral qualities that are the basis of amateur sports.

Forty-eight years have elapsed since establishment of the first Olympic Village. The next, the 22d Olympic Games, will start soon in the Soviet Union. And now Moscow's Village will hospitably throw its doors wide open to the outstanding athletes of more than 130 countries.

The hosts of Olympiad-80 are preparing to greet their Olympic guests with the Russian people's inherent hospitality and cordiality.

Special attention was paid to the question of preparing the Olympic Village and to the choice of the site for building it.

The experience of preceding games was thoroughly studied, and a number of meetings and consultations were held with representatives of the MOK [International Olympic Committee] with a view to ascertaining and subsequently considering their opinions and desires, and what their views were about what the Olympic Village of 1980 should be like.

It was initially proposed to place the Olympic Village in Izmaylovo, using for this purpose the hotel complex being built there. But in this case the Olympic Village would be too far from the main Olympic complex and many other sports structures. The MOK's requirements would not have been met fully and the design of the hotel buildings themselves would have had to be reworked considerably.

After working out several options, it was decided to build the Olympic Village in the southwestern area of Moscow, at the continuation of Michurinskiy Prospekt and the southern intersection of it with the Kashira-Rublevo highway. The grounds for the future abode of the Olympians occupy 107 hectares. This area was chosen for construction of the Olympic Village not by chance. There are no large industrial enterprises or noisy superhighways here, but there are many gardens and parks.

It is not far from the Olympic Village to the main Olympiad-80 sports arena. The Central Stadium imeni V. I. Lenin, where the official opening and closing ceremonies of the 22d Olympic Games will be held and where competitions in 7 types of sports also will be conducted, is a 15-minute ride from the Olympic Village. A bus trip to the other most important Olympic center--the sports complex in Krylatskiy, where rowing, bicycle racing and archery will be held--takes no more than 20 minutes. The Olympic Village branch in Bitets is the same distance. And other sports arenas are also relatively close to the Village.

The design for the buildup of the Olympic Village was worked out by a collective of architects from Studio No 3 of Mosproyekt-1 [Administration for the Design of Housing, Public-Building and Municipal Services Construction] under Lenin Prize winner Ye. Stamo. Glavmosstroy [Main Administration for Housing and Public-Building Construction in Moscow City] built the Olympic Village facilities. Today all 36 structures have been erected. Some of them were turned over in turnkey fashion, and the remainder are close to the end of the finishing work, or operating equipment is being installed.

The Olympic Village is divided into two zones: housing and international. The main entrance to the Olympic Village's international zone is from the direction of Michurinskiy Prospekt. Two buildings--the administrative building (the Direktorat) and the Cultural Center--extend along the prospekt, forming a Main Entrance, with a vast reception area with parking spaces for cars and buses. Opposite the Main Entrance are the Shopping and Personal Services Center and a dining-room type restaurant. Upon entry into the Olympic Village participants in the games pass through accreditation in a hall located in the Direktorat building. Here also are a foyer with halls and a oar, an information bureau, a banking division for currency operations, a post office, a telegraph office and a telephone calling center.

Exit from the administrative building leads to the social center area, from which entry can be gained to all parts of the Olympic Village. From the left of the main entrance is a central pedestrian avenue, which reveals a vista of the housing. From the left of the Main Entrance a space of mutually related areas with flower beds, sculptures and small architectural forms is revealed, and beyond them there are a stadium, a set of covered sports structures, football fields, athletic courts and green lawns. The terrain of the locality enables a pretty pond to be created close by, whose shores will divide up the park, and multitiered slopes and terraces have been built.

The General Board's building consists of two shapes--a stylobate (a one-story part) and a four-story part. Marble, granite, toned polished glass, anodized-aluminum display windows, and valuable types of wood are used in the building's decoration.

For the first time a Cultural Center has been built specially for participants in the Games on Olympic Village land. Its two-story building is well sited in the northern part of the village. It was made in the shape of a single straightforward figure.

A sports complex, also for the first time, was built on the grounds of the Olympic Village. It is intended for training, rubdowns and physical fitness measures and is distinguished by diversity of the entrances to its facilities. All the necessary athletic training halls, swimming pools and auxiliary premises have been interlocked in one complex.

The shopping and personal-services center and the dining-room restaurant of the Olympic Village have been placed in three interlocked buildings: one of three stories and two of two stories. They are joined by one pedestrian area raised above the ground. The dining-room restaurant, which seats 4,000, is in the three-story building. There are two cafes on its open verandas. In one of the two-story buildings is a department store, and in the other are all facilities for personal services.

An automatic telephone exchange and a seven-story polyclinic building also have been built on the Olympic Village's grounds.

Improvements--slopes, terraces, retaining walls and open staircases--have been made on the land on which the Olympic Village is located that take the peculiarities of the relief into account. A landscaping theme of its own has been created, using various types of trees and shrubs in each interior court of the housing zone to impart an individual nature to each group of housing buildings. Illuminated advertising and information signs, decorative illumination of areas and buildings and bias lighting of the

The Olympic Village.
A Panorama. (above)
[continued on next page]

Construction of the Building of the Shopping and Personal Services Center and the Dining-room Restaurant. (left)

The Olympic Village. A Panorama. (above). [Continued from preceding page]

Construction of the Sports Complex. (left)

The Polyclinic Building (left).

The General Board Building (below).

greenery and flowerbeds--all these promote a special ambience in this largest architectural complex.

Buildings of 18 and 16 stories are assigned for the sojourn of members of the national athletic delegations. This type of housing (three-section, large-panel PZ/16, assembled from unified components, using improved finishing), recently have been used widely in developing some Moscow rayons. The area of one housing building is 12,252 square meters, and the total area of all the housing is 220,500 square meters. There are three entrances to each building. Comfortable apartments of 2 or 3 rooms, in each of which no more than 2 people will stay, have been prepared here for the athletes. Thus, the maximum living in one apartment will be 6 Olympians, and the maximum on one floor will be 20.

The living space of a 2-room apartment is 32 square meters, of a 3-room apartment 46 square meters. Each apartment has a spacious entrance hall, a kitchen, a bathroom and a lavatory. The apartments are equipped with built-in cupboards and have small balconies. Comfortable furniture developed by Moscow designers, wallpaper of pleasant color, smart luminaires--everything is available here for pleasant, homey relaxation.

In each room there are two beds of standard length, or 230 cm long for tall athletes, clothes closets with individual sections for each athlete, a bedside table (it can be used at the same time as a stool) with a lock for things for personal use, a magazine table, and convenient semi-soft chairs. The room's interiors are embellished with children's figures. In each room there is a thick curtain. The furniture designers and the workers of the Moscow association Inter'yer strove to create in the rooms an atmosphere of homey comfort, where the participants of the Games can relax well after a strenuous day of athletics.

The Games' participants will be fed in the dining-room restaurant, a special Olympic menu having been made up for them, but still, it seems, each would like to be able to prepare a mug of coffee or tea in his own apartment. For this purpose, one must pass through the spacious vestibule into the kitchen. Here one will find an electric teapot and light elegant dishes for one-time use.

Two separate buildings, Nos 1 and 3, have been set aside for women members of the national delegations. They are not partitioned off from other housing buildings but certain formalities are required for entry to them.

Apartments for the staffs of the national athletes' delegations are located in the same buildings where the athletes will live. In all, eight types of premises for staff apartments are called for. They are equipped with everything necessary to support the work and rest of the national delegation managers.

Rational planning, the wide use of finished design solutions, the closeness of the chosen sites to new, existing housing blocks, and the opportunity to conduct operations without first demolishing permanent buildings

At the start of the 1950's the complex's first large structure appeared--a natatorium, with an all-purpose 50-meter pool and stands seating 1,200, which marked the start of construction of a number of remarkable sports buildings that are now well-known in the architectural world. A sports palace with artificial ice rink and stands for 2,700 was built in 1961, it occupied a central place in the complex's master plan. In 1966, in the heart of the section that was reserved for a set of open tennis courts, there rose up a tennis palace with a tall lighted hall, where an arena based on two courts, with stands on one side seating 500, was set up. The tennis palace, with the memorable outlines of a parabolic vault, right away occupied a place among the best works of domestic sports architecture. On the right of the court building a palace for weight-lifting was erected in 1971. A compact centric figure, it is based upon a square plan, with an elongated horizontal articulation of facades that contrasts with the dynamic curvilinear outlines of the covered courts, sort of completing the ensemble of the complex's three-dimensional structures. A smart exhibition sports hall, with stands on both sides for 1,200, where competitions in weight-lifting, wrestling, boxing and basketball are held, serves as the nucleus of the building. Six specialized training halls have been located on both sides of the hall, along the windowed front of the building. Not far from the main grounds of the complex, on 3d Peschanaya Ulitsa, back at the end of the 1950's there rose up a stadium with a football and track nucleus, surrounded by standstands seating 10,000 spectators, and quite recently a dormitory for athletes and a sports dispensary went into operation there on the main grounds of the complex.

And although the master plan calls for, moreover, the erection of a methodics center, a sports hotel, a training skating rink and an administrative building, the complex even in this form is one of the largest and most interesting in composition of the capital's exhibition training centers. It is a point of attraction not only for well-known masters of sports but also for many thousands of spectators of adjacent rayons and districts and those who enroll regularly here in various groups and children's and youths' schools.

During the 22d Olympic Games the complex's rebuilt and renovated structures will be used widely to train Olympians--the boxers will use the weightlifters' palace, swimmers the natatorium, and gymnasts the well-appointed gymnastics hall.

Even so, the development of sports' life has set new tasks and required the erection of three new bulky structures, mainly for classical and traditional "summer" types of sports--track and football. Indoor tracks, which until recently could be counted on one's fingers, have been increasingly confirmed in sports-construction practice, winning the "right of citizenship" for the obvious need for year-round training in track and an expansion of the sphere of indoors events. Most domestic indoor tracks were intended for instructional and training activities and have not had seats for spectators; the capacity of the largest exhibition tracks (the Track imeni Brat'ya Znamenskiye in Moscow, the Track Palace in Minsk, and others) does not exceed 1,200-1,400 persons.

There are still very few indoor football fields, because of both their external dimensions and the traditional concept that football is an outdoor sport. But still our country's climatic peculiarities indisputably dictate the need to have training indoors in the winter and between seasons. Indoor arenas are needed by children's football schools and by teams of masters of sports for effective preparation for participation in European Cup playoffs and for maintaining a proper level of our football overall. But, possibly, the time is not far off when football matches will take place in vast halls with stands for tens of thousands of people. Such a hypothesis is not a groundless fantasy: as proof of this are the overflowing stands of the capital's sports palaces during minifootball competitions and, in recent years, the rapidly growing popularity of spring games for the prize of the newspaper SOVETSKIY SPORT that are held in the training arenas of Spartak in Moscow and Zenit in Leningrad, the first not having been designed for spectators at all, while the second accomodates up to 1,500 people with difficulty.

The desire to provide the best conditions for year-round sports activities and competitions in leading types of sport despite the caprices of the weather led to the idea of amalgamating such large structures as tracks and football fields in one building. It is understandable that the creators of the TsSKA arena were not given the same task that was solved during the erection of special covered stadiums in Moscow and Leningrad for citywide use, with stands for 35,000 and 25,000 spectators; they tried to find for their structure a singular operational interpretation and optimum capacity. Unlike Moscow's Dinamo Stadium, where such arenas are united with well-known operating solutions on one flat surface within the framework of a purely training structure, two exhibition-type arenas, each with an independent spectators' section, are next to each other here, under one roof of a gigantic building, enabling competitions to be conducted simultaneously in both parts of the building.

It is difficult in our times to astonish people with an unusual combination of various structures brought together in one building. Buildings with four, five and even seven halls specialized by type of sport, a natatorium next to a track, spreadout buildings and high rises with courts and natatorium--what combined structures do we not encounter today in sports construction alone! Yet there are no other buildings with such combinations of basic structures. Along with the exhibition purpose, these are primarily multipurpose instructional and training centers with six halls (not counting the arenas themselves) with developed systems for serving athletes, a museum of sports glory, a food-serving unit, a methodics office and a multitude of other diverse premises.

The new structure is situated in the depths of the TsSKA sports complex, in a newly formed area, which in the near future will form a transportation isolator at the intersection of Leningrad Prospekt with the fourth Moscow transport ring. The area is formed by the sides of the Aeroflot administration buildings that are under construction and still another new TsSKA construction project, and a multipurpose sports hall for hand games for 5,000 spectators that has been set in line with the building for the indoor arena.

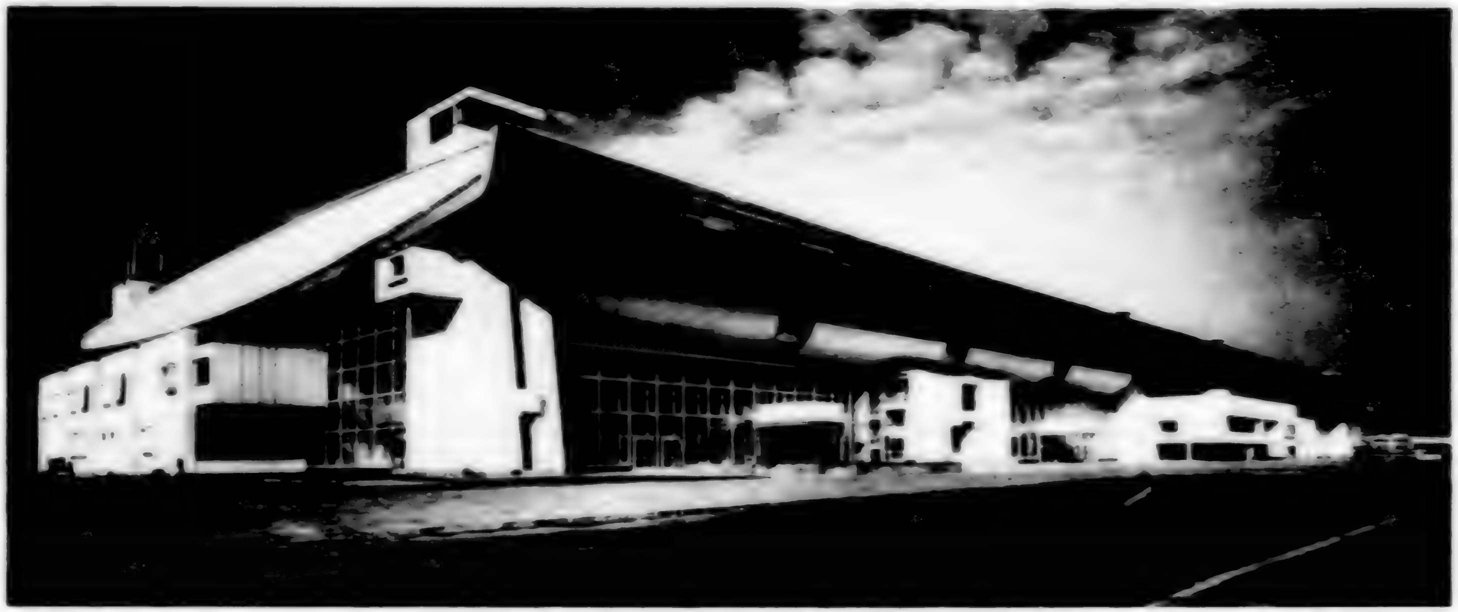
From the side approaches an astonishingly attractive vista of a monumental and, at the same time, a joyful and "easy" building is revealed. It is light, despite its impressive dimensions: 306x108 meters in plan, 18.4 meters high, with a total volume of 606,000 cubic meters and a useful space of about 52,000 square meters. The building rivets attention on itself at once by its scale, harmonious proportions and wholeness of theme. The warm yellow-to-gold range of facades plays a major role in the emotional perception of the structure. An attractive color tonality is created by white limestone pylons and piers, the light-brown travertine of the entry overhangs, and the golden pull of an overhang. The decorative appointments of the facades complement the stained glass over the central and side entrances, which are modest in size.

Already today the front square before the building, paved with hexagonal concrete slabs, can accommodate 450 cars and 150 buses. The improvements of the area call for abundant greenery and the creation of decorative fountains and posts with a high-relief composition on the theme, "Man, Sport and Nature." In designing the transport isolator, the evacuation potential of the structure was expanded, but also the existing surface transport facilities of Leningradskoye Shosse and the Dinamo and Aeroport subway stations will support the loading and evacuation of spectators. Even so, it is still believed that the future highways and the completed new area will have a beneficial effect on the perception of the army structure, and it is to be regretted that such an impressive and attractive building, which is capable of beautifying not only Leningradskiy Prospekt but also any prospekt of the capital, was hidden, far off the highways, beyond the "spine" of the inspiring airport-building ensemble.

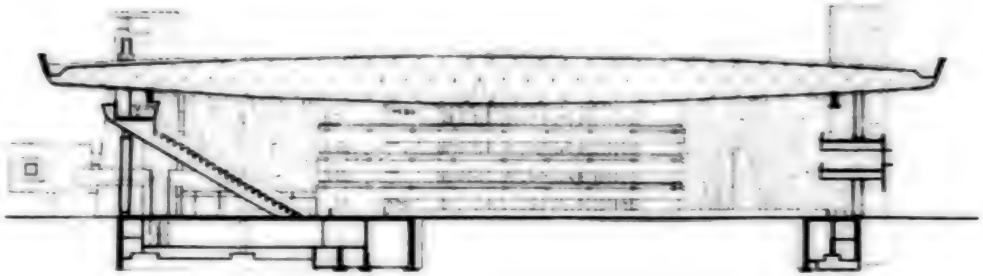
A Portion of the Main Facade.

The designers solved the arena with a spreadout elongated composition, with the plan and elevations built with maximum precision. Simplicity, combined with high technical feasibility and good taste, were generously rewarded--the building achieved an impression of wholeness, of having been made in one spirit, and, in the final analysis, it achieved clarity of concept and incarnation.

The enormous building, rectangular in plan, was solved strictly symmetrically. The football arena and the track, each 126x84 meters in size, were placed in the two main parts, which are united by an inner court. The



Football and Track Arenas of the TsSKA [Central Army Sports Club].



Architects Yu. Krivushchenko, (manager of the designers' collective, A. Chekmarev, D. Ragozin and G. Antimonov, engineers V. Samsonov, A. Radchenko, A. Lifshits, N. Zenin, Ye. Lebedeva, Z. Il'ina and Ye. Fomina and technologist-engineer I. Shveytser. The roof designs were worked out by engineers P. Troitskiy and I. Ruzhanskiy. A general view (above).

A Lateral Elevation (left).

enabled the Olympic Village to be built at minimum expense. Furthermore, this ensemble of buildings and structures was not established just for the sake of two weeks of Olympics. It was built to take the future into account. After the Games end, the Olympic Village will become one more residential microrayon of Moscow. For this purpose, four kindergartens and two schools were included among the 36 facilities built right away. During the games these premises will be used for the storage of sports paraphernalia and for other administrative and operational services. The new microrayon that has risen up on the extension of Michurinsk Prospekt has entered organically into the overall layout of Moscow's makeup.

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Central Army Sports Club

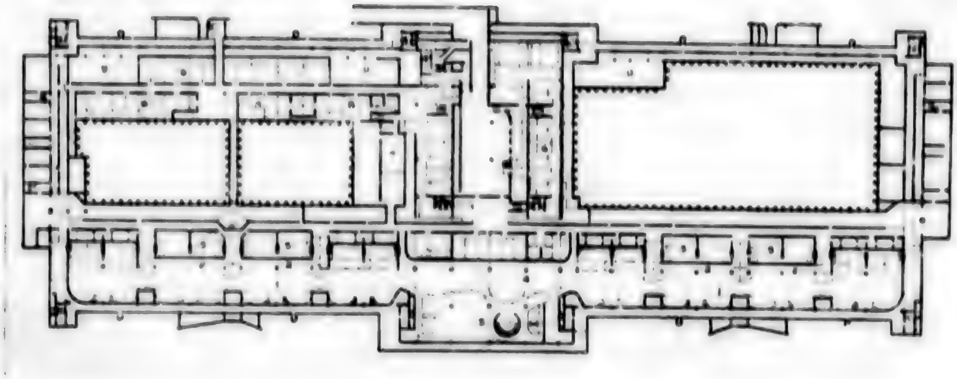
Moscow ARKHITEKTURA SSSR in Russian No 1, Jan 80 pp 10-15

[Article by G. Yasnyy, candidate of engineering sciences: "The Football and Track Complex of the TsSKA [Central Army Sports Club]"]

[Text] The forming of a modern athletics complex that joins open playing fields and courts with large three-dimensional structures in a single area and the creation of a well-proportioned system that will support year-round instructional and training activities for many types of athletics, outdoors and indoors, combined with a potential for holding competitions in the presence of a large number of spectators, is a complicated task that involves many plans.

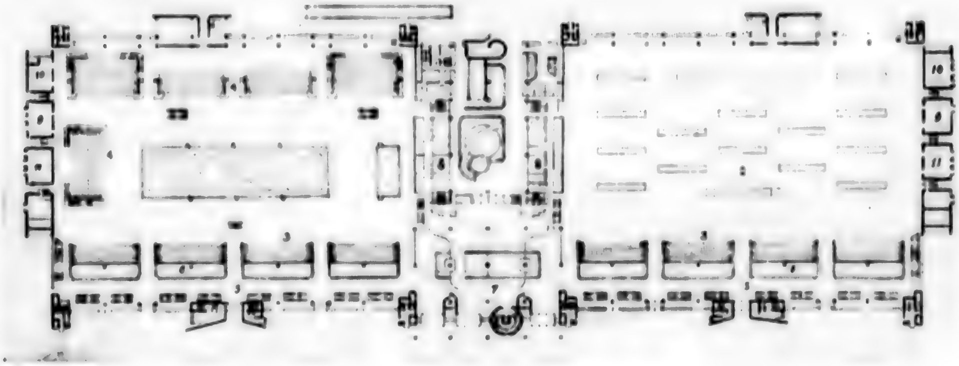
Sports complexes are architectural formations that grow with time. An important and, at times, the decisive influence on shaping existing sports complexes has been exerted by the sharply defined trend of the past decade to move pastimes and some competitions from open structures to closed ones. Even until comparatively recently, volleyball, basketball and handball were exclusively informal types of sports, but now everyone is accustomed to competitions of these kinds being conducted the year round, in specially equipped halls. The rise in skills and complication of operating techniques stimulate the desire for protection from the atmosphere's interference--rain, the sun's blinding rays, gusts of wind--to conduct activities and competitions under stable microclimatic conditions. More comfortable conditions for attending and watching attract a larger number of spectators and support the firm success of athletic competitions.

The story of the capital's TsSKA sports complex on Leningrad Prospekt can serve as a typical example of the shaping of a modern sports center, and the achievements and miscalculations in the 30-year path of its formation give serious food for thought to architects who work in the area of sports structures. Shortly after the war, at the end of the 1940's, the Air Force's sports club began to equip its playing halls in the buildings that remained as a legacy from the flying school that had been located at Khodynskoye Field. These halls, along with newly constructed halls, now make up an entire small city of specialized structure for gymnastics, hand games, wrestling, boxing and other types of sport that take up little room.



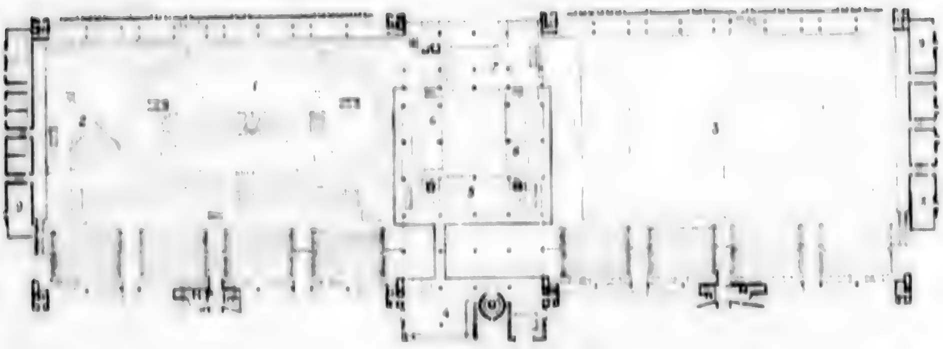
Plan for the Socle Story.

1. Foyer. 2. Buffets. 3. Press-bar. 4. Smoking rooms. 5. Auxiliary buffet. 6. Athletes' dressing rooms. 7. Storage space for equipment for converting the arena. 8. Saunas. 9. Ventilating chambers.



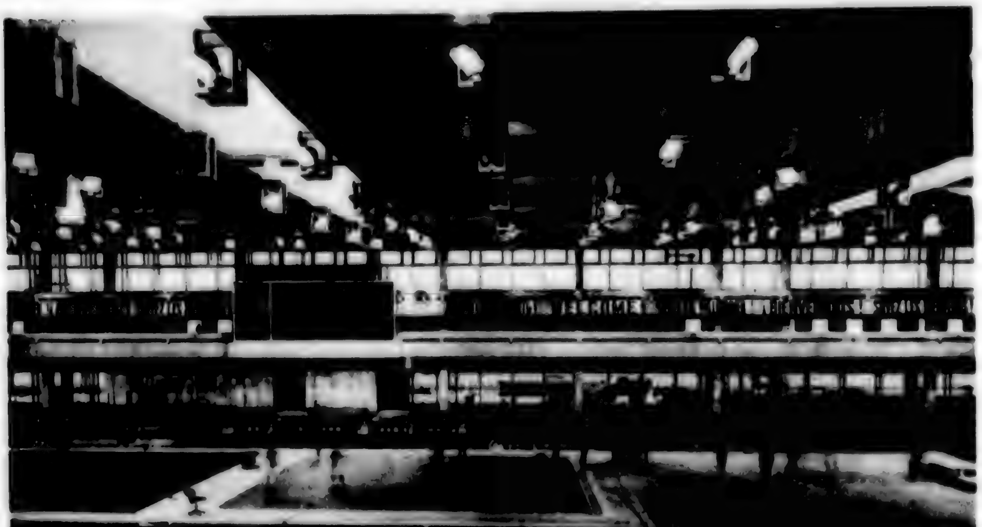
Plan for the First Story (the Variant for Olympic Use).

1. Exhibition arena for wrestling events. 2. Demonstration arena for fencing events. 3. Fixed stands. 4. Temporary stands. 5. Vestibule for spectators. 6. Cloakrooms. 7. Press-center vestibule. 8. Administrative premises. 9. Halls for athletic training. 10. Storage space for conversion equipment. 11. Utilities premises.

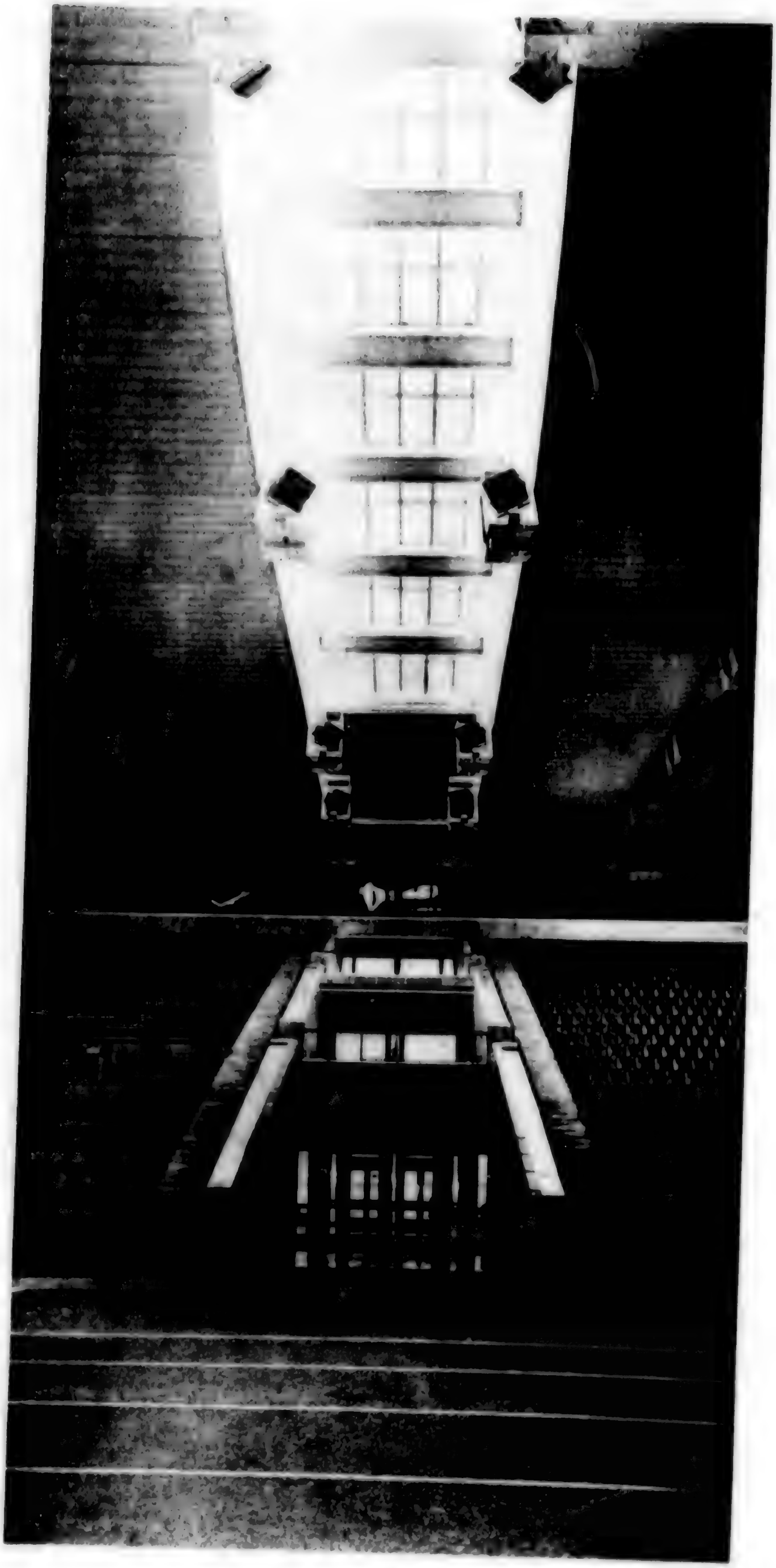


Plan for the Second Story (Variant for Everyday Use).

1. Track arena (2d row of windows). 2. Sectors for throwing. 3. Football arena (2d row of windows). 4. Press center. 5. Hall of sports glory. 6. Administrative premises. 7. Dining room. 8. ATS [automatic telephone exchange] 9. Utility premises.



The Hall for the Track Events Arena
A Competition in Artistic Gymnastics

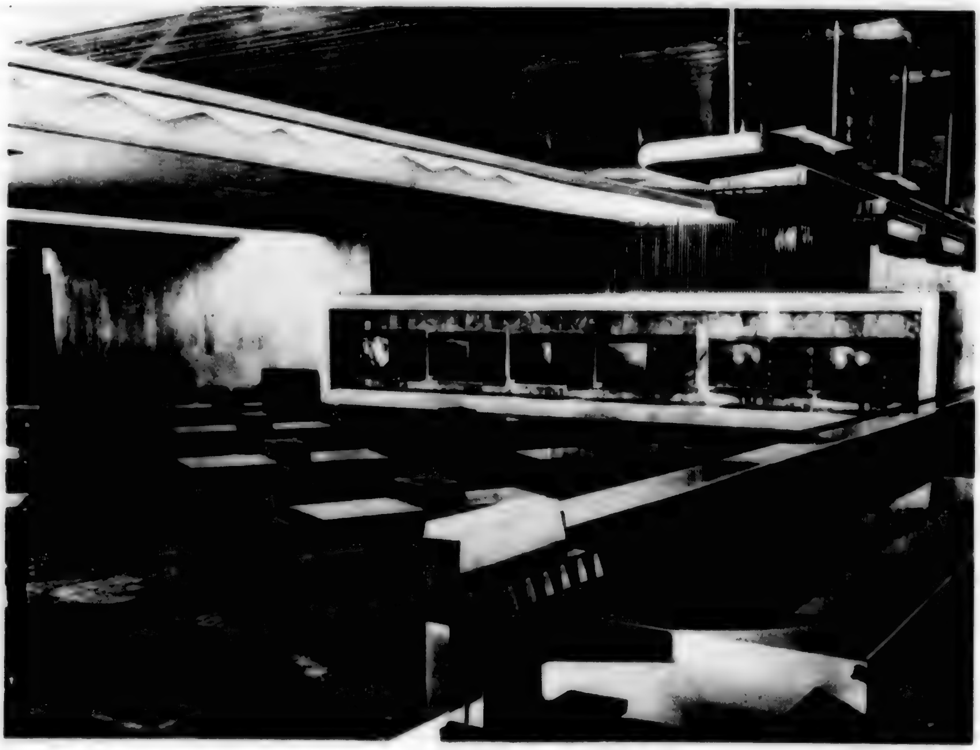


A Portion of the Arena

The First Floor Vestibule

Hall of the Football Arena During Fencing Events

The Press Center (above). The Press Bar (below).



total capacity of the structure is 12,000 spectators--6,000 in each hall. Of this number, 5,000 seats are in stands that face one way, from the side of the main entrance, and 1,000 in balconies and galleries.

The architecture of the building was solved in large monumental shapes. Powerful pylons at the corners of the main facade, which conceal the stairwells and pylons in the middle of the building, create a visual illusion of support that bears the enormous ceiling, and, together with stone inserts and overhangs above the entrances, serve as relief accents for the glassed facade. The space of the press center, which was placed in the center, against the plane surface of a wall, brings out the symmetrically centrist construction of the building.

The great ceiling, cigar-shaped in cross-section, with a span of 84 meters and a cantilever overhang with projections of 12 meters each, serves as one of the main shape-organizing elements of the building. A main design element of the structure, the 30,000 square-meter ceiling consists of steel panel-modules 4.3 meters wide, which combine the functions of load-bearing and enclosure structure. Prestressed continuous steel sheets 2 mm thick, which take on the main forces and enable the load on the girders to be greatly reduced, were welded to the comparatively light paired girders on the top and on the bottom. At the same time, the steel sheets at the top form the roof and, on the bottom, they carry the acoustic ceiling, luminaires and loudspeakers. The curvilinear shape of the roof promotes improvement of the hall's acoustic qualities, thanks to the nonparallelness of the ceiling's surface and the arena floor.

The enormous member, made with two girders plated with steel on the top and on the bottom and weighing 104 tons, was assembled at the construction project from factory-made parts; it was rolled by winches along a special inclined bridging to a 16-meter height, and then moved on dollies into the designed position.

Eight openings between the panel modules were left open, glazed and thus converted into overhead lighting skylights, with a sharply raised coefficient of natural illumination over the whole depth, creating an additional effect of air and space in the perception of the halls.

A mighty horizontal overhang, together with the half-suspended "beam" of the commentators' booths that cuts the plane of the stained glass, connects the interior space with the nearby environment and completes the composition of the main facade, amalgamating all its elements into one whole.

The relief figures of the storage spaces and the halls for athletic training that were placed on the surface of the end facades correspond with the "inserts" of the main face, promoting a more plastic perception of the building from a side vantage point.

A terrace, from which a view of Khodynskoye Field opened up, stretched along the outside west facade, under the cantilever of an overhang. The facade was split by several solar-protection walls to protect the viewer's eyes from the sun's direct rays.

The football arena is located on the right side of the building. The floor, 110x60 meters in size, is covered by an artificial synthetic grassy Astroturf cover on a springy padding over the concrete foundation. The height of the hall at the lowest point is 14.6 meters, enabling competitions not only in football and all types of hand games but also archery to be conducted here. For purposes of storing screens and other arena-conversion equipment, storage places are called for at the ends of both arenas and, under the track arena, in a hold-like space with a platform pushed up from below.

The track arena, 126x62 meters in size, is based in the left portion of the building, the operational base of which are four circular 200-meter running tracks of optimal configuration with a minimum radius of 16 meters for the banked turns. The hall's perimeter has been edged by a track for walking events. The oval of the track is skewed from the hall's lateral axis toward the center of the building, freeing a spot for siting the sectors for throwing the discus and javelin and for shotputting. Such a solution enables running, jumping and hurling events to be conducted simultaneously without any mutual interference.

Nine straight tracks 126 meters long, for sprints and hurdles at all distances, adjoin both sides of the circular track. Six of the tracks for races have been placed at the side of the stands, and three training tracks are farther away, by the stained glass. Six more 60-meter straightaways and two places apiece for high jumping, long jumping and pole vaulting have been sited within the circle, and places to practice jumping have been located between the stands and the straight running track. The running tracks are covered by a poured synthetic material, Astroturf-Track, the sectors for throwing events by slabs of the domestic Rezdor. Transforming the track arena for holding events for other types of sport is naturally somewhat more complex than at the football arena, because of the fixed turns of the circular running track, which jut out over the arena's flat surface. However, even here, competitions in many types of sports can be held, both in individual sections of the arena and on the special removable platform that is raised above the turns.

The central part of the building, which joins the arena, is a six-story block for services for athletes, and a center for controlling the structure. Placed here are a vestibule for the athletes, which has a separate entrance through a small inner well-lit yard, dressing rooms, judges' rooms, and trainers' rooms, methodics classrooms, and administrative offices. A motion-picture hall that seats 250, a musem of sports glory, and a dining room for 200 are here. There is an independent entry in the inner yard for operating needs and for servicing the food-services unit.

Two training rooms with two tiers of windows have been placed on the block's third floor: one 48x24 m in the eastern part for handball, and one 42x18 meters in the western part for general physical training. The halls, 7 meters high, get additional light from above by the top skylights, and they are supplied with self-contained units for dressing rooms. Moreover, for each hall a place for concentrated training 15x9 meters in size is stipulated for each arena, at the level of their main flat surfaces.

A separate entrance leads to the press center, which has been sited in the main portion of the central block for services. Work rooms for correspondents, a press-conference room, a communications center and a teletype facility have been placed in an area of 600 square meters. The press center is joined on the second floor with the room for the board of judges.

The services system for the athletes--dressing rooms, saunas and massage rooms--have also been duplicated under the arenas in the socle floor of the building. Special stairways lead the trackmen to three exits that are located directly at the place of the events--to the running tracks and the throwing sector.

The premises associated with spectators' services are distributed along the main facade. Entrances on the first floor level lead into vast vestibules, with cloakrooms for outer clothing that extend under the ridge piece of the stands. On the socle story, under the vestibules, is a foyer with snackbars, smoking rooms and lavatories.

An amphitheater grandstand, the whole height of the building, has been divided into separate isolated sections, enabling the crowd traffic to be organized without compartments or tunnels. The intervals between the sections serve as entrances from the vestibule into the lower rows, and wide staircases lead to the upper-row seats. This one-story solution, instead of a multiple-tier solution, enabled the spectators' routes to be greatly reduced--evacuation here in case of need takes only 4-5 minutes. The seats in the stands are marked by a high degree of comfort--the distance between rows is 85 cm, and the width of the seats is 48 cm.

In the upper area, above the stands, in a glassed "balcony," are the commentators' booths, judges' rooms, photofinish booths, and a radio center. Another 34 commentators' desks and places for television cameras have been equipped in the stands, the loggias for honored guests and the press have been set apart, as have places for competitors and sports federation representatives. Each category of attendees has at its disposal separate entrances into the buildings and the stands.

The smart rich-colored interiors of the halls arouse interest with the harmony of scale of all the elements, which not only emphasize the impression of enormous spaces but also impart to it the necessary comfort and engender the spectators' feeling of involvement in the sport. This is achieved by all the architectural components--by the handsomely drawn unobtrusive balconies, by the soft tones of the pink-brown coquina that enriches the sculpturing of the walls, which combines organically with the stands' orange-red seats and the ceiling, and by the large articulations of stained glass, which are emphasized by the great "clusters" of searchlights, which are grouped together with the loudspeakers. When the hall is not illuminated, the blocks of luminaires can appear to be hulky and uneasy, but aside from the solution of a complicated technical task (the installation weighs 300 kg), when the searchlights are switched on the "hulks" prove to be completely in harmony with the gala, uplifting air of the hall's architecture.

The foyer of the first floor, with finished marble columns, granite floors and easy stairs, are filled with light and air. To the reproach of the designers, it was possible to set up only an abundance of hanging brass luminaires, which diminish the scale of the premise and are somewhat pretentious in shape, just like the extraneous nature of the sinuous guardrail in the central vestibule.

The area for spectators' services on the socle floor is a gigantic elongated enfilade that is divided into fire-protection compartments just by glass doors, which do not in the least prevent the spectator from perceiving it as broken-up space, and it is emphasized by the narrow granite "runner" that stretches out along the whole 300-meter front.

The structure has been equipped with modern technical means for illumination, giving directions, communications and control. Metallized lamps have been installed here to provide color television with 2,000 luxes of illumination for the halls, and an electronic computer center for information, an ATC [automatic telephone exchange] and an automated system for controlling the utilities systems have been installed. The arenas have been equipped with alphanumeric electronic information displays 12x4 meters in size, and each competition site, whether it be the wrestlers' pad or the fencing strip, has its local display board.

Last summer,during the 7th Spartakiad of Peoples of the USSR, the new structure, which was built, in all, in 3½ years, passed the "combat test," a general check of its Olympic purpose. As in the days of the forthcoming 22d Olympic Games of 1980, all the complex's services worked with a full Olympic workload. The football field was converted into an arena for fencers, who competed simultaneously on 17 freely arranged strips, and the 350-400 participants, team representatives and judges were at their places of engagement, were accommodated and moved about the main flat surface, not in the least preventing the conduct of the competitions. The shotput gave way to a raised platform with four pads, on which the wrestling events took place. Before the Olympic Games additional temporary stands for 1,500 will be erected beside the platform, opposite the main grandstand, and places for rubdowns of wrestlers before their bouts are being organized on pads laid down in the training halls and in the entrance hall of the socle story. Forty team dressing rooms 20-25 square meters in area each will be allotted to the Games' participants.

The Spartakiad tournament in artistic gymnastics was performed on a platform of the track arena, enabling the system of musical accompaniment and the hall's high acoustic qualities to be checked.

Soviet participants and foreign guests of the Spartakiad evaluated the new building as a "magnificant and comfortable" structure that produced a grand impression.

And, in conclusion, a few words about the name of the new structure. Today it is named the same as it was at the early stage of design: "The Football and Track Complex." It would seem that this is not precise, either in essence (the complex should name the combination of all the TsSKA structures) or in form. This structure, which is rare in sports technology, and finds such an interesting incarnation, should, obviously, be given a memorable name that is in keeping with its major architectural ring.

Today the army complex is augmented by the new structure, which undoubtedly is not only the most substantial and prestigious among its predecessors, but it is also one that enriches considerably the club's sports potential. But the sports complex still has a future. By the Olympics a new general-purpose hall with stands for 5,000 will be put into operation--the epicenter of competitions and training for the hand games, the reconstruction of the stadium and an increase in capacity of the stands to 25,000 are planned, and completion of the structures that the complex's master plan calls for is not far off. The army sports center will survive and it will be developed.

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FINAL PREPARATIONS AND EXPECTATIONS FOR OLYMPICS

Moscow IZVESTIYA in Russian 11 Jan 80 p 6

[Article by V. Popov, First Deputy Chairman of the "Olympiad-80" Organizing Committee: "The Days of the Olympiad Are Drawing Near"]

[Text] The strenuous and much planned preparatory work for the Olympiad-80 that began almost five years ago is coming to an end. The concluding period is especially crucial; it is difficult to overestimate the importance of each remaining day and hour.

The Games will last for two weeks in all--from 19 July to 3 August--and each day will be filled with various events. It is expected that more than 10,000 athletes from 130 countries on all continents will participate (the Olympiad in Munich in which 122 countries appeared was the most representative to date).

The number of all participants, guests and official personages attached to sports delegations will comprise approximately 13,000. The Games will be officiated by 3,500 judges including 1,900 arbiters from abroad. The entire leadership of modern amateur sports will be coming: members of the International Olympic Committee and leaders of national Olympic committees and international federations of all types of sport. Incidentally, during the Games, according to established tradition, the next congress of the majority of the sporting federations will be held. Up to 7,800 press representatives will cover the Moscow Games. The arrival of several hundred thousand tourists from all corners of our country and abroad is expected.

One of the chief problems during the preparation period for the Games was the creation of a material-technical base. Olympic construction has basically been completed. In all, 99 Olympic structures designed for various purposes have been erected or reconstructed; 76 are in the capital and the rest in Tallin, Leningrad, Kiev, and Minsk.

During the final days of last year and during the beginning of 1980 the inspection commissions for the Olympic structures worked intensely.

By 15 March the construction and reconstruction program for all forms and types of structures for the Olympic Games should be completely finished. This is in accordance with available plans and schedules and will make it possible to use the remaining months to complete technical installation and training of staff, that is, to prepare for the specific function of each structure during the Olympic Games.

It should be remembered that half of all Olympic sports structures were already completed last summer and were actively used for holding contests during the Seventh Summer USSR People's Spartakiade.

If one glances at a map of Moscow on which all of the sports structures of the future Olympiad are marked the question may arise: Why are they so "scattered"? Would it not be advisable to gather a majority of the buildings in "one fist"? During development of the Olympic construction and reconstruction program the long-term prospects were considered. And if we again look at the map from this point of view we will see that from now on all of the principal architecturally planned zones in Moscow will have their own new physical fitness-sanitation work centers and many of the buildings may also be used for cultural and social purposes.

The social-economic expediency of all Olympic construction is one of the most characteristic features of the 22nd Olympiad in Moscow. These features are due to the fact that the Olympic Games are being held for the first time in history in a socialist state.

For example, the Olympic village, which according to general opinion will be the best in the entire history of the Olympics Games, will become one of the best housing microrayons where residents of the capital will reside after the Olympics are over. Symbolically, the first buildings that were ready in the Olympic village complex and which for the time being are intended for management-administration needs, will become a school and kindergarten in the new microrayon.

Another example is the Olympic Television and Radio Center. This building, with completely up-to-date technology, will make it possible to broadcast the Olympiad to the entire world on 20 color television channels and 100 radio frequencies. After the Olympic Games the new center will transmit Central Television programs on a much broader scale to all territories of the Soviet Union, while taking the time zones into consideration.

I would like to direct the reader's attention to the fact that with all of the complexity, diversity and often innovative nature in realizing the Olympic construction program in our capital no changes were introduced in the annual planning for municipal housing and social-cultural construction.

All who are directly involved with the preparations for conducting the 22nd Olympiad Games are constantly aware of the attention and support of the Communist Party and Soviet government. As is well known, on 25 December of last year the question concerning preparations for the Olympic Games was reviewed by the Presidium of the USSR Supreme Soviet. Concern was displayed with renewed strength by the highest organ of state authority in the Soviet Union for conducting the Olympiad on a high level in accordance with the rules of the Olympic charter. The systematic aid of party and Soviet organizations from Moscow and other "Olympic" cities in the USSR was of great significance in the success of the preparations. Many ministries, departments and state institutions of our country, social organizations, scientific-technical centers, and the highest levels of Soviet society are actively participating in all pre-Olympic affairs.

It is calculated that the stands at the 26 sports structures in Moscow, Tallin, Leningrad, Kiev, and Minsk will be filled with spectators 380 times. About six million tickets for attending sports contests have already been printed and await their owners. It should be emphasized that more than two-thirds of the total number of tickets are intended for our compatriots--residents of the capital and other "Olympic" cities and tourists from the republics, oblasts and cities in the Soviet Union. The remaining tickets will be acquired by foreign tourists and guests; incidentally, distribution of them has practically come to an end.

One of the important features of the Moscow Olympiad will be the diverse cultural program. A broad presentation of Soviet multinational arts will take place in concert halls, theaters, museums, and exhibition halls of the capital and other cities. It is as if the intensive theater-concert season had been moved to the usually "quiet" summer months. In all during the Olympiad period about 600 theater performances and up to 1,500 concerts are expected in Moscow. Along with this the ispolkom of the Moscow soviet of people's deputies decided to make the start of the concerts and performances during the Olympiad period an hour later in order to make it possible to make arrangements to attend both the sports and cultural programs. All of this, including the Soviet cinematographic art works show and also the tours of the city and environs, will make it possible for the participants and guests of the Olympiad to feel the spiritual richness of our country, to understand the place that satisfying the cultural requirements of the Soviet people occupies in our way of life and to imagine what huge contributions the culture of our people makes among the treasures of world culture.

It must be said that the celebrations that have been prepared for opening and closing the 22nd Olympic Games, which by its composition will reflect the tradition that has formed in our country of conducting massive festivals with a limited blending of art and athletics, will also show to a certain degree the interesting and notable side of our life, filled with historical optimism, humanism and international friendship between the peoples of our great homeland.

The world will learn about the Olympiad most of all through television (more than two billion viewers will see the contests), radio, and reports by telegraph and press agencies. The Olympic Television and Radio Center and the press sub-centers in all buildings, equipped with the required and most up-to-date means of communication and information, will be at the service of journalists. A daily bulletin "Scheduled Events and Results" will be issued for the useful information of the press, guests and participants. Much attention has been given to the problems of lodging and domestic, transportation and cultural services for the press. Along with the concern that the world should learn of the Olympic events more quickly and fully the Soviet attitude towards the problem of the exchange of information and of coming to an understanding of the problem contained in the concluding statement of the Helsinki conference is also displayed.

The forthcoming Olympic Games are not only the largest international sporting event. They can and undoubtedly will make an important contribution towards improving the world atmosphere, strengthening cooperation, peace and friendship between peoples in complete accordance with the high ideals of the Olympic movement. In light of this, the preparations for them also presents a good example of international cooperation. Along with hundreds of Soviet enterprises and institutions, many foreign enterprises and firms will take part in them; in this manner, scientific-technical and economic cooperation with various countries is accomplished. Although approximately three-fourths of the equipment and inventory for all that will be used at the Olympics is being manufactured at plants and factories in the Soviet Union, the contributions of foreign firms are also quite noticeable. Among them are "Elektroimpexs" and "BEAG" from Hungary, "Motokov" from Czechoslovakia, "Karl Zeiss Yena" from the GDR, "Tonson TSF" (France), "Coca-Cola" (USA), and a number of firms from France, the FGR and Finland.

The economic program for the Olympiad also presents an interesting form of international cooperation. Many foreign organizations are also taking part in it alongside of Soviet organizations. These are the sale of television rights to show the Olympic Games, granting licenses to produce goods bearing the Olympic symbol, philatelic and numismatic programs, running the "Sportloto" and "Sprint" lotteries in our country, and others. The proceeds from all of the projects of the economic program as well as the profits from the sale of tickets and fees for lodging Olympic participants must be used to cover the expenses used to directly organize and conduct the Games. Everything says that this task may be successfully managed.

Naturally the organizers of the Games must solve a whole range of problems related to accommodating the participants, tourists and guests for the Olympiad. Let's say that many specialists in the so-called bulk professions need to be added to the staffs already engaged in the area of service in Moscow. They are trained in the educational and course institutions at Mossovet; students will be used for many of the tasks. Another problem concerns translators, so important for normal contact between the international Olympic family. More than 10,000 additional translation specialists are being trained in 40-45 languages. The hotel fund is being increased (in Moscow, for example, by a factor of 1.5) Additional public eating establishments are being opened. Much work is being done to prepare medical services for the participants, guests and tourists.

With all the importance and complexity of these crucial problems Moscow, with a population of eight million, has the experience to successfully solve them. Under normal everyday conditions up to two million visitors are located in our capital during the course of a day.

The Olympiad, due to its scale and by its significance, attracts the attention of the entire world. The exhibitions, publications and films about the progress of the preparations which the Organizing Committee is sending abroad are being utilized with great interest and the requests for informative materials are simply physically impossible to satisfy. Already, although the time to make official applications has not yet arrived, it may be said that the majority of national Olympic committees has expressed in one form or another their intention of participating in the Games and the Moscow Olympiad promises to be the most representative in the entire history of the Olympic Games.

Much has been written in the press concerning Olympiad-80. The principal tone and content of that which is printed abroad reflects the interests of a large number of countries for developing the sports movement and conveys a deep interest in the success of the 22nd Games. Along with this the Olympiad also has foes. They are attempting to cast a shadow over the progress of preparations and also over the Games themselves. But the discourse is not about honest observations and constructive criticism similar to that which was expressed, for example, during the USSR People's Spartakiad ; it is well known that they helped the organizers in eliminating the deficiencies that were noticed during preparations for the Olympiad.

The present "criticisms" are being uttered by politicians who are using the present conditions in the world for imposing some "notion of a boycott" on the Moscow Games. This is not the first such attempt. All previous ones collapsed. The reports of telegraph agencies speak of the fact that the organizers of the new attempt at political speculation against the noble theme of the Olympics have choked on the muddy water from the waves which they themselves stirred up.

A number of reactionary sports organizations from western countries have tried and continue to try to drive a wedge between the Olympiad and the developing countries, most of all the African sports movement. Sports contacts are being organized with the racists from the South African Republic, for example, which aroused the universal indignation of African countries in order to provoke them into refusing to participate in the Moscow Olympiad, as was the case in the analogous situation of the Montreal Games.

A fitting rebuff to this attempt was given at the Ninth General Assembly of the Supreme Council of African Sports which took place in December 1979 in Cameroon in which 44 countries from the continent participated. The Assembly greatly valued the progress of preparations for the 22nd Olympiad Games, called for broad participation in the Moscow Olympiad and condemned the reactionary circles in Great Britain for the provocative sports contacts with the South African Republic.

The Ol/mpic Games in the modern sense have become a great and important event towards the overall progress of contacts between peoples and countries. Addressing the participants of the Seventh Summer USSR People's Spartakiade Lenonid Il'ich Brezhnev wrote: "I wish that the ideals of brotherhood, friendship and mutual understanding which influenced the Olympic movement would always influence the atmosphere of meetings between athletes from different countries."

The organizers of the 22nd Olympiad and a broad section of Soviet society are making every effort to ensure that these high ideals will be realized this summer.

9495
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PROGRESS OF OLYMPIC PREPARATIONS

Sports Arena Completed

Moscow STROITEL'NAYA GAZETA in Russian 30 Jan 80 p 4

[Article by V. Kamenetskiy: "Arena of Heroes"]

[Text] Not far from Izmaylov Park construction of an all-purpose sports hall is being completed. During the days of the Moscow Olympiad competition in heavy athletics will take place here. The hall is being erected according to the design of a collective from Soyuzsportproyekt, headed by architect I. Gunst, which originated it.

The main sports arena, where weight-lifting competition will take place, is divided by a rigid wall into training and demonstration areas. There are nine weight-lifting platforms in the training hall, locker rooms with showers for the teams, a doping control room and a medical center. An interior courtyard is also provided for athletes to relax. It is possible for 5,000 spectators to simultaneously observe the contests.

The lightness and elegance of the sports palace's form is emphasized by the wall trim of Middle East pale rose-colored coquina. The finish work here is being done by Mosotdelstroy's trust No 5, the finest Armenian craftsmen headed by chief superintendent S. Yeretsyan from the Armenian SSR Ministry of Construction and a crew of masons from Belorussia.

The personnel from SU-165 [Construction Control] trust No 2 of Glavmosstroy have done fine work at the construction complex since the first days. The eight communist labor crews, the best of them being A. Romanov's and A. Koltygin's, will invariably prove to be among the best in management among construction workers at Olympic sites.

During these tense, crucial days the delivery of everything that is needed to the site on time has decisive significance. However, the board of directors for the sports buildings under construction from the Main Capital Construction Management of the USSR Sportkomitet have not yet delivered some of the equipment.

After completion of the 22nd Olympic Games the all-purpose sports hall will be turned over to the students of the Physical Education Institute for training exercises.

Minting of Medals Underway

Moscow STROITEL'NAYA GAZETA in Russian 30 Jan 80 p 4

[Article by V. Ganshin, correspondent from TASS: "Medals Are Already Being Minted"]

[Text] Craftsmen at the Leningrad Mint have begun to fill, speaking figuratively, the order of the year--they have begun minting the Medals for the 22nd Olympic Games.

Leningrad residents have no small amount of experience in such a matter. One of their last jobs was the awards for the champions and prize winners of the Seventh Summer USSR People's Spartakiade.

At the Moscow Olympiad 203 sets of medals will be won in individual and team competition--444 gold, the same number of silver and 463 bronze. Several extra are being minted since in several sports, for example, gymnastics, it is possible that ties could result for the prize winning places between several athletes.

The medals are being made according to a sketch by Moscow sculptor I. Postol. On the front side, the god of victory, Nike, and a fragment of the Coliseum colonnade is portrayed; the inscription in Russian reads "The 22nd Olympic Games. Moscow. 1980." On the reverse side is an outline of a track, the bowl with the Olympic flame and the official emblem of the Moscow Olympiad.

The diameter of the medals is 60 mm; the thickness is 3 mm. The championship awards are minted from silver with a gold coating as specified by the Olympic charter. Silver medals will be presented for second place and bronze for third. Bronze memorial medals are also being struck at the Mint.

Press Center

Moscow STROITEL'NAYA GAZETA in Russian 30 Jan 80 p 4

[Article by V. Kononykhin: "The Press Quarters Awaits Its Masters"]

[Text] A state commission has approved the Main Press Center building, giving it a mark of "excellent"; thousands of journalists who are accredited for the 22nd Olympic Games will be working here. A unique complex that is furnished with modern equipment will be at their disposal. A huge stream of information will flow from the building on Zubov Boulevard along communication channels to printed publications on all continents. The design for the Olympic press quarters was created by the Moscow Scientific Research Institute of Design for Structures Intended for Cultural and Public Health Use. It was brought to fruition by the staff of Kamgesenergostroy under the USSR Ministry of Energy.

We are making a tour of the building with deputy chief of the "Olympiad-80" administration from the Kamgesenergostroy combine, A. Zlotnikov. Almost all of the construction workers have left and have been replaced by assemblers and equipment adjusters.

Obviously it is impossible to see all of the press center quarters--the usable area is more than 40,000 square meters. Therefore we will confine our inspection to the principal services and imagine to ourselves how the members of the press will be going about their work in several months.

Journalists will pass through a spacious, festive hall on the first floor finished with travertine and rose tufa to the accreditation point. They will be met by experienced press service workers, furnished informative materials and a key to a personal box. All the questions that the guests to Moscow have can be decided right here when meeting the representatives of MOK [Moscow Olympic Committee], the Organizing Committee and the International Association of Sports Press. If one needs to change money--go right ahead at the bank.

We climb to the second floor along a marble staircase. The most remarkable feature here is the press conference hall with 350 seats. Television and radio programs will be broadcast from the commentators' booths. Simultaneous translation into six languages will be of assistance in contacts between journalists and their guests. During the days of the Olympiad a different concert program is scheduled for each evening.

The press quarters will be open round the clock. Due to the time differences many journalists will have to transmit materials both during the night and early morning. Services will be adapted to accommodate such working conditions--the restaurant, cafe, bars, studios, communication areas and transportation.

Reports, information and interviews will be written in 6 halls with 600 seats each amid the clatter of 2,000 typewriters. An avalanche of information will stream to newspapers, magazines, and headquarters of telegraph agencies along communication networks.

New apparatus has arrived to assist journalists to speed up delivery of information. One of them--the telecopier--makes it possible to accurately reproduce a printed or written text and in 30 to 40 seconds transmit an image of it to any part of the globe.

We concluded our inspection of the Main Press Center and I expressed my admiration to A. Zlotnikov for the beautiful work done by construction workers. The service quarters, halls and rest areas are pleasing, every detail perfectly finished, from the mosaic floors to the ceilings made of perforated gold-colored aluminum.

Construction workers have done fine work for the sake of the lines that will be printed in newspapers in the future. Journalists can repay the debt to their readers with interesting, objective, well-intentioned material about the Moscow Olympiad.

9495
CSO: 1821

CONSTRUCTION

TOUR OF PRESS CENTER DESCRIBED

Moscow PRAVDA in Russian 9 Dec 79 p 6

[Article by Yu. Andreotti: "World Press Headquarters"]

[Text] A prominent feature has emerged in Moscow's architectural appearance. A six-story building of unusual form has arisen on Zubov Boulevard--the Main Press Center for Olympiad-80. A state commission has approved the newly constructed building with excellent marks.

Although several months remain until the opening of Olympiad-80, the press center management has already begun work in the new building. Today, the director, B. Il'ichev, is familiarizing the first journalists with this creation by Moscow's architects and construction workers. The architects have made a contribution here to tradition and modernism. On the outside the building is faced in white stone in the Moscow style of architecture. It harmonizes well with the wide windows and stained glass panels. Incidentally, their total surface is about 4,000 square meters--an abundant amount of light. The windows are framed in gold-colored anodized aluminum. All of the lower horizontal surfaces are also faced with this. The press center, therefore, looks festive.

Today we are going along the same route that will be repeated shortly by thousands of journalists who will arrive for the Olympiad. First we come to the accreditation point. After receiving an accreditation card and a key for a box (it will be constantly filled with press bulletins and other information) the press representatives proceed to the work areas. Separate quarters have already been set aside for 40 world telegraph agencies. The remaining journalists will work in 6 halls at 600 places. They are equipped with everything that is necessary. A trailer with typewriters from the Italian firm "Olivetti" is being unloaded right before our eyes. In all about 2,000 typewriters with various scripts will be delivered here.

We go up to the second floor on a marble staircase. Two comfortable sitting rooms are located here. Each has many televisions and monitors. Without leaving the room one can see the Olympic contests. All Soviet television programs will be received here and live monitors will show what is happening at any given moment in any sports arena.

We proceed to the left side of the building that is set aside as a photo complex for the French firm "Kodak-Pate." In essence, it is an entire factory where specialists quickly develop and print black and white or color film. For those who prefer to do this themselves there are 12 booths with equipment located nearby. Masters from the Japanese firm "Nikon Kogaku" are located not far from here, who can repair damaged photographic equipment.

Passing through a corridor we come to an unusually shaped hall. "Basically it is intended for press conferences," says Il'ichev, "but we decided to use it for broader purposes--for the leisure time of the journalists--also an Olympic first. We have developed a cultural program for this purpose. Here press personnel will be able to acquaint themselves with the leading Soviet performers. We are also attempting to show the guests the best Soviet films. The hall is equipped with a system for simultaneous translation into five languages."

The third floor is the "nerve" center of the press headquarters. In addition to the means of communication located in each office about 100 telephone booths for international calls and more than 100 teletypes have been placed here. Not far away telecopiers are being installed.

Won't there be too much noise from all of the technological items? No, the entire ceiling is covered with perforated gold-colored aluminum and sound insulating structures.

The top floor is the domain of technological equipment. Ventilating units, air conditioners and various supply lines are here. There are still two more floors that are not visible to the eye--they are below ground. Thus, in fact, the building has eight stories. There are entrances for vehicles in the lowest levels. They will supply everything that is needed for the round the clock work of the press center, for example, products for the building's own kitchen. It will "feed" the restaurant, cafe, snack bars and press bars.

Upon leaving I became acquainted with a sample press guide. Each accredited journalist will receive this informative brochure. In the handbook press personnel will find information about the Soviet system of mass means of communication, information on Moscow, sports structures, transportation, hotels, and a plan of the Main Press Center.

9495
CSO: 1821

CONSTRUCTION

CONSTRUCTION PROJECTS IN MOLDAVIA REVIEWED

Kishinev SOVETSKAYA MOLDAVIYA in Russian 10 Jan 80 pp 1-2

[Article by A. Proskuryakov, Director of the MSSR Gosplan Construction Division: "Moldavia Under Construction"]

[Text] Four years of the 10th Five-Year Plan are behind us. During this period the economic might of our country has increased significantly and the lives of the Soviet people have become richer. This was aided by implementation of the broad program of capital investments outlined by the 15th CPSU Congress for the 10th Five-Year Plan.

During the past year in our republic alone many industrial and agricultural enterprises, shops and factories were put into operation equipped with modern technology, including such large ones as spinning and weaving factory No 2 at the Tiraspol' cotton combine, the Soroki outer knitted wear factory, the 11th power unit of the Moldavian GRES, the "Dnestrovsk" hothouse combine, the second phase of the "Moldavizolit" plant and the cold storage unit at the meat processing plant in Tiraspol', the plant for processing kernels of corn at Reutsel station, the whole milk substitutes shop at the Kishinev municipal dairy, the creamery in Floreshti, the laundry equipment plant in Faleshti, and others. A large program of housing and social-cultural construction was also completed. By means of all sources of financing, housing units with a total area of about 1,500,000 square meters, 30 schools with room for almost 20,000 pupils and 25 kindergartens and day nurseries were put into use, as well as hospitals, polyclinics and other institutions.

In addition, by means of kolkhoz funds, cattle-breeding facilities that can house 47,000 long-horn cattle, swine-breeding facilities for 54,000 head, a mixed-feed plant with a capacity of 61,000 tons of products per year, a granary, and a large quantity of structures designed for social-cultural use were put into operation.

The enterprises that were put into use are a good foundation for successfully completing the programs of the 10th Five-Year Plan as a whole. The plan for the concluding year will be saturated with new construction and the schedule will be very tight. It was formulated in accordance with the decisions of the 25th Party Congress, the decrees of the CPSU Central Committee and USSR Council of Ministers "Concerning Improvement in Planning and Strengthening the Influence of the Economic Mechanism for Increasing Production Efficiency and the Quality of Work," and also by taking into consideration the wishes and recommendations expressed by General Secretary of the CPSU Central Committee and Chairman of the USSR Supreme Soviet comrade L. I. Brezhnev at the November 1979 Plenum of the CPSU Central Committee concerning the necessity of increasing the effectiveness of capital investments, reducing the number of construction jobs and putting them rapidly into operation.

The total volume of capital investments for the development of the national economy in the republic including funds from enterprises and organizations of the union ministries and departments, housing construction cooperatives and public organizations as well as kolkhoz funds comprises more than 1.5 billion rubles. A significant portion of them, as before, will go into further strengthening the material-technical base of energy, machine building and agriculture, in developing the food, timber and woodworking industries and the construction materials industry, and in strengthening the production bases of construction organizations.

An important feature of the plan for 1980 is the tendency of concentrating funds on technological reequipment, reconstruction and expansion of operating enterprises. In all it is projected that 66 percent of the capital investments allocated for industrial construction will be directed toward this goal. By carrying out these measures a growth in output is envisioned for the production of wood chip tiles, furniture, precast reinforced structures and components, sewing articles, tricot for undergarments, hosiery products, leather shoes, soft leather, granulated sugar, confectionary items, whole milk products, cheese, powdered skim milk and milk substitutes, mixed feeds and in processing grain and other products.

In connection with this the technological structure of capital investments is improving. On the whole the specific portion of construction-assembly work of the total volume of capital investments for the republic and union-republic will decrease and will comprise 49 percent.

It is projected that the level of incompleted construction will be significantly lower than normal. At the end of 1980 it will comprise, in all, 43 percent of the republic's economy.

While working out the plan for contract work special attention was given to concentrating capital investments at starting sites and to decreasing the total number of structures that are simultaneously under construction.

Energy, as is well known, is the foundation for developing the national economy. By taking this into consideration construction will continue and the start-up of operations will be ensured for the 12th power unit at the Moldavian GRES with a capacity of 210,000 kilowatts, an 80 kilowatt unit at the Kishinev TETs-2, a number of step-down transformer substations, electric transmission lines with a length of 3,800 kilometers and main heating networks with a length of 8 kilometers.

The key factor in technological progress, its foundation, is considered to be machine building. In this sector a pressing-welding building at the Kishinev tractor plant was put into operation that will make it possible to increase output by 1,300 tractors as well as a production building at the Soroki technological equipment plant; construction of a tomato-harvesting machine plant in Bel'tsy is continuing as is expansion of the production capacities at the Kishinev food handling equipment plant, the Oknitsa experimental technological equipment plant and the "Komplektkholodmash" plant.

A significant amount of capital work is projected to be implemented in the leading sectors of the republic's industries--the food and meat-milk industries. The following will be put into operation: primary winemaking plants in Chimishliya and in villages in the Bul'boak and Novoanen rayons, each with an output of 40,000 tons of processed grapes per season, shops for processing tobacco at the Drokiya tobacco farm and plant, capacities for bottling wine at the Kishinev wine-cognac combine and for manufacturing fruit and vegetable canned goods at the Kamenka cannery (expansion) with an output of 66.1 million cans per year, the Kaushany cannery with 14 million cans, the Kalarash cannery (reconstruction) with 13.6 million cans, and the Ogreyev cannery with 7 million cans per year, capacities for processing sugar at the sugar plant in the town of Birunitsa in the Lazovsk rayon (reconstruction) with an output of 12,000 quintals of processed beets per day, and bread at the Tirapol' bakery (reconstruction) with a capacity of 100 tons per day. Construction is continuing at the Brichany sugar refinery with a capacity of processing 60,000 quintals of beets per day, a meat processing plant in Tiraspol', a municipal dairy in Rybnitsa, primary winemaking plants in Kaushany, in the village of Romaneshta in the Strashen rayon and in the village of Onishkana in the Kalarash rayon (expansion) and tobacco-curing complexes in the sovkhozes imeni K. Marx in the Kriulyan rayon, "Leninskaya Iskra" in the Drokiyev rayon and "Tabakovod" in the Rezin rayon with an output of 768 tons per season; construction will begin for the fish-processing plant in Orgeyev.

Proceeding from the unprecedented pace of growth for light industry that was put in the 10th Five-Year Plan, it is projected that for the republic 45,000 spinning work places at the Tiraspol' cotton combine PTF-2 and 5,040 spinning spindles at the carpet combine in Ungeny will be put into service during the current year; a significant increase in output is also projected at the Kishinev sewing factory imeni the 23rd CPSU Congress. Preparatory work for expanding the Bendery silk combine, to increase output by 39.5 million square meters of fabric, is beginning.

Significant capital investments were earmarked for the development of construction materials industries and the construction industry. A structure at the Pervomayskiy crushing-sorting plant will be completed, construction at the Rezina cement plant will continue as will reconstruction work at the Floreshty glassworks and the Bel'tsy ZhBI [Reinforced Steel Products] plant and KID No 5 [Plant for Large Panel Construction]; expansion of Tiraspol' glassworks will begin which will increase output by 120 million units of conventional jars per year.

More than 5 million rubles of capital investments are being provided for the development of the furniture-woodworking industries. They will be directed towards technological reequipment and expansion of operating furniture factories in Kishinev and Bel'tsy.

For the further development of local industry 8.4 million rubles have been allocated. By means of these funds the Chadyr-Lunga carpet factory will be significantly expanded, reconstruction of the leading enterprises of the Association of National Industries under the carpet complex will continue, construction of the principal enterprises that manufacture nap carpets will begin, and construction of the manual rug-weaving shop in Leovo will continue.

The plan for 1980 outlines a strengthening of the material-technical base for agriculture which will provide a further improvement in the use of agricultural lands and basic funds and an increase in the level of concentration and specialization in agricultural production based on inter-economy cooperation and integration of agricultural industries. State capital investments for the entire complex of work for developing agriculture is projected to total more than 370 million rubles, including more than 150 million rubles worth of construction assembly work.

By means of these funds new animal-breeding facilities for long horn cattle, swine and sheep will be built as well as mechanized warehouses for storing mineral fertilizers, chemical weed and pest killers and limestone materials. The capacities of poultry plants will be increased and an irrigation and drainage system for 16,400 hectares will be put into operation. Much work is contemplated for improving the status of land reclamation for areas under the existing irrigation system and also for completing cultural-technical work on agricultural lands which do not require drainage. About 30,000 new comfortable apartments and also individual homes with a total area of 1,620,000 square meters will be built and put into use by state and cooperative enterprises and organizations, kolkhozes and the general population. Due to this the specific portion of homes erected according to new types of designs will increase, providing improved finish work and more comfortable apartment layouts.

It is planned that 27 new general education schools that can accommodate 23,000 pupils, 69 kindergarten preschool institutions for 15,400, 6 hospitals and medical buildings, 9 polyclinics and a number of other structures designed for enlightenment, domestic and cultural purposes will be put into service.

It is projected, in particular, that the training-laboratory building in the architectural department at the Kishinev Polytechnical Institute imeni S. Lazo will be put into use, that construction will continue for the philological department buildings at the state university and at the Kalarash Pedagogical Institute and for the cafeteria with a seating capacity of 530 at the polytechnical institute. Construction will begin on a cafeteria for the Republic Technical School of Physical Education. The electric supply and water and sewerage systems will be expanded in cities and towns in the republic as well as in rural regions.

During the current year kolkhozes are planning to allocate more than 310 million rubles towards capital investments, including about 180 million rubles for construction-assembly work. These funds will go toward construction of cattle-breeding facilities for 15,800 long horn cattle, facilities for 64,200 head of swine, mixed feed enterprises with an output of 122,000 tons of feed per year, hothouse combines with an area of 3 hectares, a granary with a capacity of 20,500 tons per single use, and other structures designed for production and cultural-domestic use.

Thus, an extensive program of capital construction is projected for the concluding year of the 10th Five-Year Plan. In order to successfully complete it Moldavian construction workers must draw important conclucions from the criticisms which were heard at the address to the country's construction workers during the November (1979) Plenum of the CPSU Central Committee and take into account the mistakes and errors of the past year. Beginning with this year, the republic's construction organizations should prepare for their work under the new conditions as required by the party and government's decree concerning improvement of the economic mechanism. To do this it is necessary to improve the system of planning and management for construction production and to improve contract discipline.

The plan outlined for the final year of the 10th Five-Year Plan is tight but realistic and is completely within the capabilities of our contractor collectives which are growing stronger. There is no doubt that by developing massive socialistic competition Moldavian construction workers will successfully complete the tasks of the party and the people.

[Summarization of Map]

Machine and instrument building: Oknitsa, Soroki, Bel'tsy, Strasheny, Kishinev, Bendery, Tiraspol'.

Light industry: Ungeny, Kishinev, Bendery, Tiraspol'.

Food industry: Brichany, Drokiya, Kamenka, Rezina, Lozovsk, Ogreyev, Kalarash, Kriulyany, Tiraspol', Kaushany.

Winemaking industry: Ogreyev, Kalarash, Strasheny, Kishinev, N. Aneny, Kaushany, Chimishliya.

Construction and reconstruction of mixed feed plants and elevators: Bel'tsy, N. Aneny, Bendery, Slobodzeya, Komrat.

Local industry: Kishinev, Leovo, Chadyr-Lunga, Kagul.

Construction industry: Floreshty, Bel'tsy, Rezina, Tiraspol', Kagul.

Furniture industry: Bel'tsy, Kishinev.

Heating power plants: Kishinev, Dnestrovsk.

Swine-breeding complexes: Dondyushany, Yedinitsy, Drokiya, Kamenka, Faleshty, Teleneshty, Ogreyev, Kaushany, Komrat.

Hothouse combines: N. Aneny.

Poultry plants: Lozovsk, Teleneshty, N. Aneny, Suvorovo.

Cattle-breeding facilities for long horn cattle: Oknitsa, Yedinitsy, Ryshkany, Rezina, Lozovsk, Ungeny, Kriulyany, Komrat, Chadyr-Lunga, Bulkaneshty.

9495
CSO: 1821

METALWORKING EQUIPMENT

UDC 621.97.972.974.979

DEVELOPMENT OF FORGING AND PRESSING MACHINES WITH PROGRAMMED CONTROL

Moscow KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVA in Russian No 5, 1979 pp 24-26

[Article by A. M. Grishkov, Z. Ya. Lur'ye, V. I. Batozskiy, V. M. Novikov]

An important area of the development and improvement of forging and pressing equipment insuring significant improvement of the productivity of labor and expansion of the technological possibilities is the creation of machines with digital programmed control. In the 9th five year plan these operations received significant development both in the area of creating experimental models and assimilation of the production of the first industrial series.

The development of the machines and the control systems for them was based on an all-around approach insuring an organic relation of the technological process of the manufacture of the products, the structural design, the drive and the control units as a united whole.

Various types of forging and pressing machines with digital program control systems have been created such as the turret-type hole-punching presses, the hydraulic press-manipulator forging unit, the sets of equipment for cutting sheets, bending equipment: sheet-bending hydraulic presses, sheet-bending rolling machines, pipe-bending machines, and a number of others.

The application of the latest types of drives and advanced schematic designs has permitted the creation of models of forging and pressing machines on the level of the world standards.

The series production of the 40 and 16 ton model K0126B and K0122P turret-type hole-punching presses has been started. The application of one press essentially increases the productivity of labor and relieves 10 to 20 units of all-purpose pressing equipment.

One of the large operations is the creation of a forging unit with digital programmed control by the ENIKMASh Institute (Voronezh) jointly with the NPO ELVA, which includes the 500 ton forging press and 2-ton rail manipulator. The unit is designed for free forging of carbon, construction, high-alloy and special steels and alloys, and it permits the manufacture of parts with extended axis of the type with smooth profiles of round, square and strip cross sections and also circular stepped shafts. The application of this unit will increase the forging output capacity by comparison with the complex with program control by 20% as a result of forcing the conditions and realization of optical technology, it will improve the accuracy and lower the tolerance for the forgings, it will relieve the operator of stress, fatiging labor, and it will reduce the number of service personnel.

The Azov Forging and Pressing Equipment Plant, the NIIAP Institute (Khar'kov) and the ENIKMASh Institute have developed 100, 160 and 250 ton I1430, I1432A and I1434A sheet-bending hydraulic presses equipped with digital program control systems of the UP6, UP7 and UP7M types. The presses insure multiarm bending of sheet billets. The application of the sheet-bending presses with digital programmed control is economically expedient for the conditions of small-series and series production, and it will permit an increase in the productivity of labor by 1.5 times and significant savings of production area.

The ENIKMASh Institute in cooperation with the NIIAP Institute has developed and manufactured the I2416F sheet bending rolling machine with digital programmed control. The machine is designed for bending closed and open shells of complex and round shape in one pass in an automatic cycle. A characteristic feature of the U0015 type digital programmed control system is the possibility of automatic measurement of the spring-action of a material and the forming of the correcting control signal insuring consideration of the spring-action. The application of roll-type sheet bending machines with programmed control for the manufacture of shells of complex configuration with quite high accuracy permits significant reduction of the labor-consumption of their manufacture and improvement of the productivity of labor.

The model KON-2 automatic set of equipment for cutting sheets up to 4 mm thick on shears with inclined blade by a given program developed by the NIIAP Institute is industrial operation. The set provides for automatic loading of the sheets, cutting them into rectangular billets with respect to simple and combined layout flow charts with sorting of the trimmed sheets with respect to dimensions and stacking them in a package. By comparison with the best foreign models, the complex has a higher degree of automation, output capacity and broader technological possibilities.

The model I0622A and I0622B semiautomatic machines with programmed control for bending pipe in a profiled roll pass between rollers which prevents distortion of the cross sectional shape of the pipe have been developed and are being series manufactured. The magnitudes of the longitudinal feed of the pipe, its rotation in the required plane and the angle of bend are programmed on special quick-change drums with adjustable stops. The introduction of this type of equipment will permit an increase in the productivity of labor of 1.5-2 times and significant improvement of the quality of the products.

The special design office for forging equipment (Azov) jointly with the NIIAP Institute has created an automatic machine for cold coiling of springs,

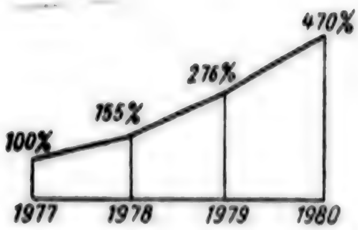

Figure 1. Growth rates of the amount of forging and pressing equipment with digital programmed control in the 10th five year plan.

model K30.001 with programmed control. The introduction of the automatic machine has made it possible to increase the accuracy of manufacturing springs: as a result of reducing the adjustment time, the output capacity has been increased significantly.

The tooling up has been done for series production of a number of machines and devices with digital programmed control by the forces of the organization of the Ministry of the Machine Tool Industry and the Ministry of Instrument Making.

Thus, in the 10th Five-Year Plan, broad equipment of the forging and pressing machines with programmed control has been started. The basic results of the work in the field of creating forging and pressing machines with digital programmed control in the Ninth Five-Year Plan were summed up at the first Soviet exhibition of forging and pressing equipment, Press-75 held in Moscow in 1975, where the indicated equipment was shown. The section for "Equipment with programmed control" aroused the greatest interest among the specialists. In the 10th Five-Year Plan the production of forging and pressing machines with digital program control will increase significantly (see Figure 1). The digital program control systems and automated control systems for forging and processing production are receiving further development in the following areas:

The creation of new specialized digital program control systems on a microelectronic base permitting expansion of the technological possibilities of the machines, improvement of the reliability and the reduction in the overall dimensions of the control systems;

The application of series digital programmed control units of the Ministry of Instrument Making and the control computer based on the development of functional software and the development of devices for coupling to the computer;

The creation of means of mechanizing and automating auxiliary and setting operations permitting complete automation of the technological process or maximum reduction of the physical labor of the operator;

The creation of complexly mechanized sections of forging and pressing machines with direct control from a computer.

In the first of the indicated areas it is possible to mention the following: the development by the NIIAP Institute and the Odessa Production Association for Forging and Processing Equipment of a digital program control system for casting machines for casting plastics under pressure; the development by the NIIAP Institute and the ENIKMASh Institute of a digital programmed control system for a straightening press for straightening the cam shafts of automobile engines; the development by the ENIKMASh Institute and the NIIAP Institute of an improved digital programmed control system for the hole-punching press in order to increase the rates of displacement of the billet, for realization of the trimming and milling conditions, and so on.

The Azov Forging and Pressing Equipment Plant has mastered the series production of the automated complexes of equipment for cutting sheets up to 4 mm thick, model KON-2 with digital program control.

The same plant jointly with the NIIAP Institute has developed an automated complex for cutting thick sheets, model K10.089 with digital programmed control; the complex has been manufactured in series since 1976.

At the present time the NIIAP Institute jointly with the Azov Forging and Pressing Equipment Plant is developing ranges of automatic complexes with digital programmed control, cutting thick sheets, models KON-4 ... KON-7. The creation of these complexes will in 5 or 6 years make it possible to increase the cutting efficiency, release the crane equipment of the shops, by means of which thick sheets are cut at the present time, completely automate the very labor-consuming process of producing thick-sheet billets.

The NIIAP Institute jointly with the Azov Forging and Pressing Equipment plant has developed an automatic line for transverse cutting of rolled K10.085 electrotechnical steel with digital programmed control (Figure 2).[1] In 1978 the plant mastered the series production of the lines. The line is advantageously distinguished from the existing lines by high output capacity and compactness (it is more than 2 times shorter than the Soviet and foreign lines available in the country). The advantage of the line obtained as a result of the application of programmed control is high speed of adjustment to a new size and shape of plate. The line permits both rectangular and oblique plates to be obtained with a length up to 4200 mm along the neutral, including with notching (Figure 3).[1] This permits tooling up for the production of more economical power transformers with oblique joining of the plates in the magnetic circuits, which will provide a large cost benefit.

In 1978 the Azov Forging and Pressing Equipment Plant has also assimilated the production of the automatic line for transverse cutting of wide-roll steel up to 2.5 mm thick, model L116 with digital program control, model U0010 developed by the TsBKM (Moscow) jointly with the NIIAP Institute to replace the previously produced L224 line. The line makes it possible to obtain a broad range of rectangular, oblique and trapezoidal billets up to 4000 mm long. The application of program control has made it possible to double the accuracy of the cut billets, to increase the cutting efficiency by 2 or 3 times. The adjustment of the line to another size of billet has been simplified and reduced.

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[1] Not reproduced.

The second area is characterized by the development of the ENIKMAZh Institute, the Azov Special Design Office of Forging Equipment, the NIIAP Institute of the two-roll sheet-bending machine with digital program control for manufacturing shells of various curvature; the development of the ENIKMASh Institute and the NIIAP Insitute of the profile bending machine tool with digital programmed control; the development of the special design office for forging equipment and the NIIAP shearing press with digital programmed control for cutting and punching holes in angle steel, and so on).

In the region of creation of means of mechanizing and automating auxiliary and preset operations and, on the basis of this, improvement of the productivity of labor and efficiency of the use of the manpower, special attention is being given to the broad introduction of automated manipulators with the program control (industrial robots). Industrial robots have found broadest application for the automation of manual, physically heavy and harmful labor and also the performance of operations in locations not accessible or difficult of access for man.

The ENIKMASh Institute is working on building automatic manipulators with programmed control (industrial robots) for servicing forging and pressing machines. In the tenth five year plan several types of automated manipulators with programmed control will be developed and put into production. They are designed to service radial-forging, radial-reduction, electric-upsetting machines, crank-type hot-stamping presses, and so on. Such enterprizes and organizations as the NIIAP Institute, the Voronezh TMP Plant and others have been called on to participate in the solution of this problem. On the basis of the 25 ton model KD2124 presses of the Sal'skiy plant of the forging and pressing association, the mdel L612 automatic line has been developed with the industrial robot RPD-1.25 and slide feeder PSh1 designed for stamping parts from sheet piece billets up to 90 mm in size and weighing up to 0.63 kg. The robot program control system is cyclic, and the program carrier is a plugboard panel. Since 1978 the lines have been series produced by the Sal'skiy Forging and Pressing Equipment Plant. The ENIKMASh Institute and the NIIAP Institute have created a two-handed PRTs-2 robot with a load capacity of 160 kg.

The automation of the auxiliary and preset operations when servicing forging and pressing equipment will permit going over to the solution of the problem of creating complex-mechanized sections in the tenth five year plan with control from a computer, and on the basis of them, automated technological process control systems (ASU TP). These systems permit direct control of the technological processes in the rhythm of the process in real time with simultaneous pressing of the economic information under the digital production conditions. The first objects with respect to application of the automated technological process control systems can be the complex automation systems based on the broad use of process equipment with digital program control and manipulated control from a united computer complex.

In such systems the computer complex solves the following functions:

Automatic preparation and calculation of the control programs for machining the parts for equipment with digital program control, including optimization of the process conditions;

Organization of the library of control programs for machining based on the external storage elements of the computer;

Planning of the loading and dispatching of the process unit;

Consideration of the production output by the equipment with digital program control;

Control of the automatic manipulators (robots) realizing installation of the billets, pickup and transfer of the parts;

Filling out a report on the work of the section for a shift;

The forming of the assignments with respect to support of the section with billets, tools and equipment.

The system must have information coupling with the automated control system of higher rank, for example, with the enterprise control system.

As the first object, the plan calls for creating a complex-mechanized section for the manufacture of parts of the panel type with control from a computer, the composition of which includes the complex for cutting a sheet that machines the center on the basis of a hole-punching press, a bending press and a manipulator.

At the present time the ENIKMASh and NIIAP Institutes are doing research work on the formation of the technological process and selection of an efficient section control structure.

Conclusion. The basic trend in the development of the automation of forging and pressing machines consists in the broad use of computer engineering based on control computers and means of mechanizing auxiliary processes with the application of automated manipulators (industrial robots).

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CSO: 1821

METALWORKING EQUIPMENT

UDC 621.73

FORGING AND STAMPING PRODUCTION AT THE ROSTSEL'MASH PLANT

Moscow KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVA in Russian No 7, 1979 pp 1-3

[Article by Chief Engineer of the Rostsel'mash [Rostov Farm Machinery Plant] Production Association Candidate of Technical Sciences A. Ye. Tserna]

[Text] In 1921, V.I. Lenin signed the Sovnarkom decree "On agricultural machine building," in which the development of machines for agriculture was defined as a matter of extraordinary national importance.

At the end of March 1927, the council of labor and defense approved the master plan for Rostsel'mash Production Association.

On 21 July 1929, the first shops of the plant were put into operation. In the same year experimental models of horse-drawn combination reapers and binders were manufactured. In 1930, on the day the Sixteenth Party Congress opened, the first Stalingrad tractor with the first Rostsel'mash planter passed through Moscow.

That is how Rostsel'mash began. It was at the time of adoption of the First Five-Year Plan and development of a mass kolkhoz movement. The growing agricultural production of the kolkhozes and sovkhozes required the mechanization of the gathering of the harvest. The first 1700 S-1 combines were produced for the harvest season of 1932.

At the international industrial exhibition in Paris in 1937, the Stalinets-1 combine was awarded the highest award -- the Gran Prix certificate. In 1940 the 50 thousandth combine came off the main conveyor of the plant. After liberation of Rostov from the German facist invaders the plant was soon restored. In 1946 the production of the S-6 combine and then RSM-8.

The plant began producing self-propelled combines in 1958. The first ones of these were the SK-3 and SK-4. By resolution of the 24th Congress of the

Party in the 10th Five-Year Plan the production of the high-output SK5 Niva combines was begun. The capacity of this machine was 8 kg of grain per second as opposed to 3.9 kg for the SK-4; with respect to reliability, convenience in servicing, metal consumption and esthetics, it is not inferior to the modern foreign models.

For production of the SK-5 Niva combine, basic redesign and technical reequipment of the entire enterprise were required. More than 160,000 m^2 of production area was introduced. A modern forging and pressing unit was built. Flow lines with mechanized inter-operation transport were introduced. The quality and the accuracy of the machining were increased by introducing new technological processes, active control, the application of advanced technological equipment.

In the expired 3 years of the 10th Five-Year Plan, the following have been introduced into the operations: an automated section for hot and cold extrusion of mass parts for the combines; an all-around mechanized power metallurgy shop with a capacity of 2000 tons; a paint shop with automatic painting and priming lines using the method of electrophoresis and conveyors; a wheel assembly shop; a galvanizing shop with automatic lines. Other projects are being constructed.

As a result of the rebuilding and technical reequipment, the level of mechanized labor at the plant has increased significantly, 4000 units of advanced equipment, 1500 automatic and semiautomatic machines, 120 automatic and flow-mechanized lines, and 50 km of conveyors have been introduced.

As a result of automation and mechanization of the production processes, the nature of the work done by the labor personnel has changed. New professions have appeared (operator-adjustors, automatic line operators) which have been mastered by young, qualified personnel.

One of the main areas in the rebuilding of the plant is the development of the forging and pressing production. It must be noted that in combat construction there is a trend toward an increase in nomenclature and complexity of the parts manufactured by the stamping method. This arises from the necessity for adopting an all-around solution with respect to the development of capacity and raising of the technical level of this production.

In 1973 the construction at the plant was completed, and the new forcing and pressing unit with an area of 70,000 m^2 was put into operation. The billeting, forcing and cold stamping production are concentrated in this unit. Metal warehouses and the layout shop are placed in the two outside longitudinal stands.

In the 12 transfer spans 120 meters long and 24 meters wide each serviced by bridge cranes with a capacity of 10-30 tons are the forcing, pressing and repair shops.

In the adjacent two-story outside longitudinal spans 24 meters wide each are the welding and painting shops. Conveyors for transporting waste are placed in the basement part of the pressing shop.

Theoretical changes have taken place in the cold stamping production. With the introduction of the forging and pressing unit into operation and the transition to the production of the SK-5 Niva combine, the volume of forging and stamping production has almost doubled, and the metal consumption has increased by 1.4 times. The capacity of the cold stamping production facility has been increased as a result of introducing new advanced equipment. In the printing and layout shops, more than 270 units of new equipment have been installed, automated and mechanized lines have been introduced, a conveyor system has been built for the removal and subsequent packaging of metal waste, and mechanized warehouses have been built for the storage and processing of the dies (see Figure 1).[1]

In the forging and pressing unit more than 1500 tons of metal rolled products are processed daily, including about 1000 tons of wide-roll products. As a result of using rolled products, the introduction of advanced equipment, the productivity of labor has more than doubled, and the use coefficient of the metal has increased to 0.8.

In the new layout shop, seven automatic lines for longitudinal and transverse layout of the wide-roll steel, semiautomatic lines for laying out thick-sheet rolled products, lines with semiautomatic systems for loading and cutting round and intricately shaped metal rolled products and pipe have been installed. Sections have been organized for the manufacture of parts made of thin-sheet profiles by the rolling method on profile bending machines from rolled billets and from metallurgical cold-bent profiles of rolled products (see Figure 2).

The pressing shop of this unit is specialized primarily in the production of parts from rolled billets. The shop has 47 automatic lines created on the basis of Soviet equipment. The lines are equipped with unrolling and straightening units, roll and extractor feed, and mechanized lifters for the parts.

In the new forging shop there are 15 mechanized lines built on the basis of 1500-2500 ton crank-type hot-stamping presses using induction heating units (Figure 3). The production capacity with respect to the manufacture of hot volumetric stampings are doubled, the productivity of labor has been increased, and the machining allowances have been decreased.

The rebuilding of the cold-stamping production facility has raised its technical equipment significantly. The level of mechanization has reached 62%.

At the plant a great deal of attention is given to the development of theoretically new technological processes and the organization of all-around mechanized sections, especially for mass parts.

The high efficiency of the production of such parts can be demonstrated in the example of the manufacture of universal-joint center crosses, the sprockets of chain drives and augers. In the forging shop of the plant the low-efficiency and labor-consuming technological process of hot stamping of the forgings of the universal-joint center process on hammers has been replaced by an advanced process of hot extrusion of them in stamps with split dies. For this purpose, three automatic lines built by the NIITraktorosel'khozmash Institute has been installed in a special section. The technological process includes cutting of the billets, tumbling, induction heating to 1150-1200° C, stamping and trimming the ends.

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[1] No figures are reproduced.

The process is carried out without the formation of seams, but to compensate for fluctuations in volume of the metal of the billet in the die compensation cavities are provided into which the excess metal flows, forming slight waste at the ends of the pins.

The output capacity of the line is 700-800 forgings per hour. Reinforced tools made of 3 × 2V8 steel are used in the dies with forced cooling. The strength of the tools is 10,000 to 12,000 forgings.

The introduction of the given technological process for the annual program for forging the universal-joint center crosses of more than 4 million pieces has more than tripled the productivity of labor, and it has reduced the annual metal consumption by 500 tons.

With the organization of the all-around mechanized section and the installation of 10 automatic mills for knurling the teeth of the sprockets in place of cutting with an annual program of up to 2 million, the problem of manufacturing sprockets has been solved in farm machine building.

The process of knurling the sprocket teeth for chain transmissions has required that an entire set of experimental operations be performed with respect to developing the design of the mill and for automation of the production process.

The knurling is carried out on the automatic mills designed by the NIITM Institute with an output capacity of 85 parts/hour. The billets are fed by a sliding feed from the holder to the gig where they are heated and the teeth are knurled. The heating time is adjusted by a time relay. The knurling is automatic. The tooth crown of the sprockets is hardened directly on the mill. The mill can operate in the automatic, semiautomatic or adjustment modes.

The introduction of a specialized section for knurling sprocket teeth has given high efficiency; 25 units of metal cutting equipment, 300 m^2 of production area and 44 workers have been relieved. The metal savings amount to more than 700 tons per year, and the total cost benefit is 270 rubles. The strength of the sprockets in operation increased by 1.5 times.

Over a period of a number of years, the manufacture of auger helixes at the plant (the demand for which was more than a million a year) have been realized by the method of hot asymmetric rolling on mills with conical rolls. The lowest productivity of labor and complexity of obtaining stable dimensions of the augers as a result of variation in the temperature of the heated strip and the tools during the rolling process have created serious difficulties in production. We began to look for means of creating a more advanced technological process for the manufacture of the augers. The experimental work done at the plant confirmed the possibility of obtaining them by the cold rolling method.

The asymmetric cold rolling of auger helixes at the present time is done on four mills with parallel arrangement of the rolls, designed by the NIITraktorosel'khozmash Institute. The organization of a complex-mechanized section on the basis of them has made it possible sharply to improve the conditions of labor, increase the productivity of labor and also significantly reduce the consumption of the rolled metal products. In addition, the strength characteristics, the surface finish and the wear resistance of the auger spirals as a result of strengthening of the billet filling the rolling process.

Cold rolling by comparison with hot rolling requires less production area, and it permits mechanization and automation of the production process.

The cost benefit will be 247,000 rubles for the plant.

Implementing the historic resolutions of the 25th Congress of the CPSU, the collective of the Rostsel'mash Production Association is continuing to rebuild and technically reequip the production facilities. By the technical plan in the forging-pressing unit provision has been made for the introduction of about 60 more automatic lines using rolled products. Work is being done on the further mechanization and introduction of an advanced process for stamping thick-sheet parts; the creation of new lines for laying out rolled products and stamping metal from 2 mm thick and up; further improvement of the process, the equipment and the mechanization of the production processes is continuing; sections and shops are being organized for the production of the assemblies with respect to the object-closed technological cycle. All of this offers the possibility of increasing the production efficiency and improving the quality of the grain harvesting combines.

The July (1978) Plenum of the Central Committee of the CPSU stated the goal for the combine builders to implement measures with respect to modifying grain harvesting combines in order to eliminate their structural deficiencies and improve their output capacity. The realization of this goal will require further improvement of the technical level of production, including forging and stamping.

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